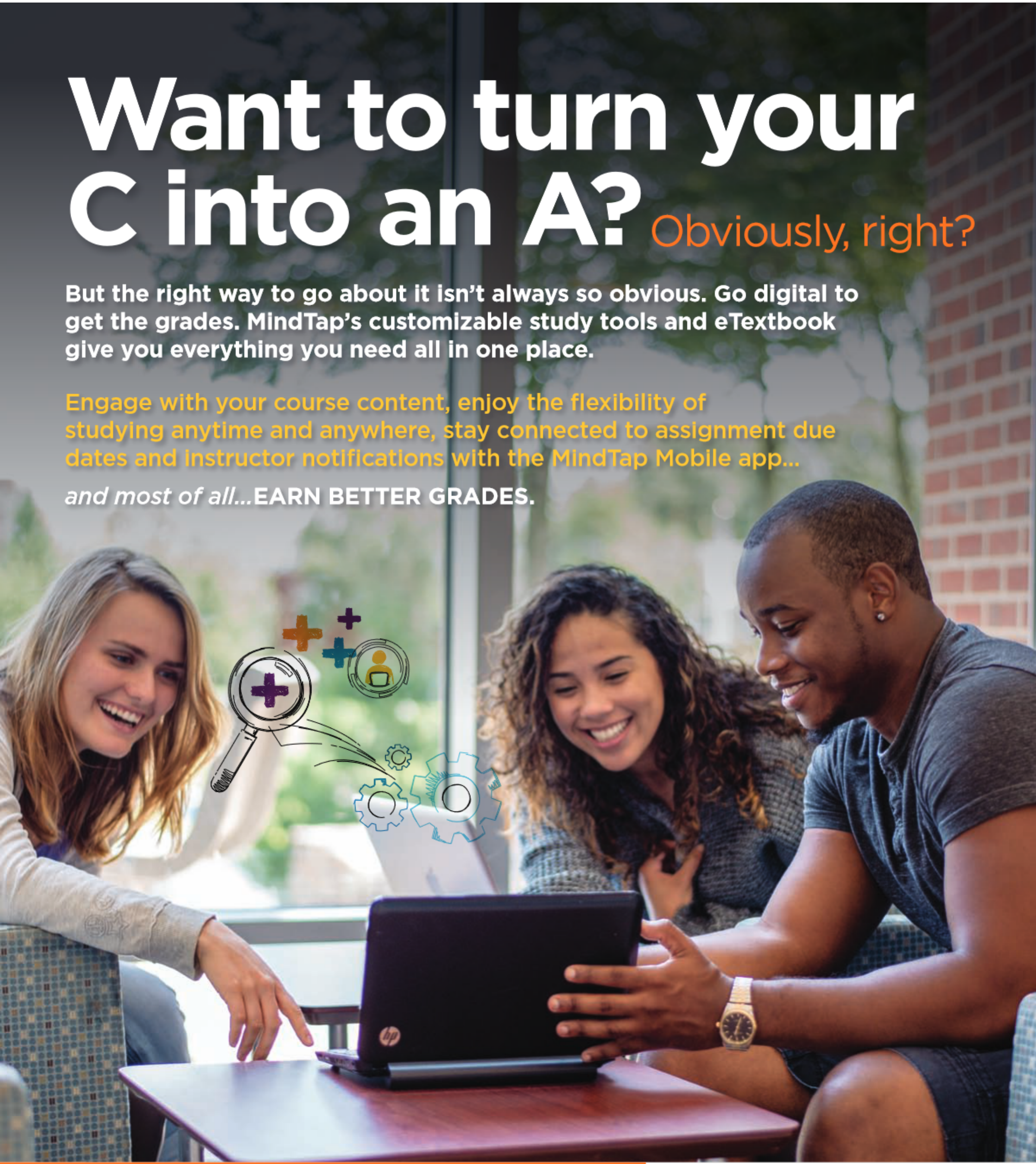
Third Edition

Disorders of Childhood

DEVELOPMENT AND PSYCHOPATHOLOGY

Robin Hornik Parritz ▪ Michael F. Troy



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THIRD EDITION

DISORDERS OF CHILDHOOD

Development and Psychopathology

ROBIN HORNIK PARRITZ
Hamline University

MICHAEL F. TROY
Children's Hospitals and Clinics of Minnesota

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Robin Parritz and Michael Troy

Product Director: Star Burruto

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Content Developer: Tangelique Williams-Grayer

Product Assistant: Katie Chen

Digital Content Specialist: Michelle Wilson

Marketing Manager: James Finlay

Content Project Manager: Ruth Sakata Corley

Art Director: Vernon Boes

Manufacturing Planner: Karen Hunt

Production and Composition Service: MPS Limited

Photo and Text Research: Lumina Datamatics

Text Designer: Liz Harasymczuk

Cover Designer: Lisa Delgado

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Dedication

Robin dedicates this book to Ari, Adam, and Jesse, with love and gratitude for these sweet babies, exuberant children, and remarkable men.

Mike dedicates this book to Kevin and Brendan, whose lives are his treasured memories, and Mimi, who brings new blessings.

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About the Authors

Robin Hornik Parritz, Ph.D., is a Professor of Psychology and Chair of the Department of Psychology at Hamline University in St. Paul, Minnesota. Robin received her undergraduate degree in psychology from Brandeis University in 1983, and her Ph.D. in Clinical Psychology from the University of Minnesota in 1989. Her research and clinical areas of interest include emotions and emotional development, developmental psychopathology, and programs designed to increase knowledge and decrease stigma related to mental illness. Robin teaches courses in Disorders of Childhood, Abnormal Psychology, Theories of Psychotherapy, Psychology of Emotion, and Clinical Psychology.

Michael Troy, Ph.D., is a clinical psychologist, Medical Director of Behavioral Health Services, and Associate Medical Director of the Neuroscience Institute at Children's Hospitals and Clinics of Minnesota. Michael received his undergraduate degree from Lawrence University in 1980 and his Ph.D. in Clinical Psychology from the University of Minnesota in 1988. He completed his internship and fellowship at Hennepin County Medical Center before joining the staff of Children's Hospital of Minnesota. His clinical and academic interests include developmental psychopathology, developmental neuroscience, therapeutic assessment, and teaching child clinical psychology as part of medical and community education programs.

Preface

Writing a textbook on the psychological disorders of infants, children, and adolescents involves multiple decisions about content, emphasis, and organization. These decisions reinforce and extend the knowledge base of the field and determine what is distinctive about the authors' approach. The decisions we made while writing this book were influenced by our academic and clinical experiences involving both typical and atypical development. When we made the decision to write this book, we were particularly interested in providing a text that was both relevant and compelling. Our hope was to provide students with the type of meaningful framework and conceptual integration that has come to characterize our field. We also wanted to offer teachers a more practical and more true-to-life approach to organizing their courses.

In this third edition, we reorganized several chapters to better reflect how disorders, combinations of disorders, and challenging diagnostic issues present in real-world clinical settings. For example, we moved the chapter on maltreatment and trauma- and stressor-related disorders to the set of chapters focused on early childhood. We also included new content on the transition to psychosis and personality disorders in a reorganized chapter on substance-related disorders and transition to adult disorders, in order to emphasize that the developmental psychopathology perspective does not end with adolescence, but rather continues to inform our understanding of individuals and disorders across the lifespan.

Multiple themes recur throughout the text; together, they distinguish our clinical and teaching emphases. Each of these themes is informed by the principles and practices of *developmental psychopathology*, an interdisciplinary approach that asserts that maladaptive patterns of emotion, cognition, and behavior occur in the context of typical development. The first theme emphasizes multifactor explanations. *Multifactor explanations* of disorders encompass biological, psychological, and sociocultural factors. These factors are examined in detailed analyses of etiologies, assessments, diagnoses, developmental pathways, and interventions. Especially distinctive is the way that we make sure to discuss the multiple ways that factors at every level of analysis need to be explored for both typically and atypically developing children. In this third edition, for example, we expanded the coverage of neuroscience research, including brain development and function (e.g., patterns of connectivity) and behavior genetics and epigenetics (e.g., gene-by-environment processes and interactions, differential sensitivity). We also expanded our emphasis on understanding the multiple environments in which children develop (e.g., relationships, families, peer groups, cultures).

The second theme focuses on *developmental frameworks* and *developmental pathways*, and this perspective is reflected in the sequencing of chapters, unique sections that open each chapter and summarize key developmental tasks and challenges, and our descriptions of disorders over time. Disorders that emerge or are diagnosed early in development are presented first, followed by disorders that emerge or are diagnosed in the elementary-school years, followed by those that emerge or are diagnosed in adolescence. This sequencing serves several purposes. First, it allows students to consider specific disorders and sets of disorders that occur in a particular developmental period in proximity and relation to one another. Second, this sequencing allows for an ongoing focus on the constructs of risk and resilience and provides a basis for coherent discussions of early-occurring disorders as risk factors for later-occurring disorders. For example, the chapter on disorders of early childhood focuses first on understanding the nature and course of these disorders in and of themselves; it also previews the multiple connections that will be made in subsequent chapters between temperament and attachment difficulties and later forms of psychopathology. Third, this sequencing emphasizes a more complex understanding of disorders: For example, we think differently about depression that is identified early and on its own than we do about depression that follows and may be related to an anxiety disorder or attention deficit/hyperactivity disorder.

The sections at the beginning of chapters that summarize the developmental tasks and challenges experienced by typically developing children are especially relevant, given the disorders discussed in the chapter. For instance, a detailed summary of the development of self-regulation, effortful control, and executive function is presented before a clinical presentation of attention deficit/hyperactivity disorder. An overview of prosocial behavior is presented at the beginning of the chapter on oppositional defiant disorder and conduct disorder, and a review of stress and coping is provided in the chapter on maltreatment and trauma- and stressor-related disorders. These introductory sections help students appreciate the developmental contexts of disorders and their core symptoms; to make distinctions among the everyday issues that most children experience, more difficult types of problems, and clinically meaningful psychopathology; and to make comparisons between the factors that influence the multiple pathways of typical development and the multiple pathways of psychopathology.

Discussions of developmental pathways, or descriptions of disorders over time, accurately reflect how each child's psychopathology unfolds over time in real life. This pathway model also emphasizes opportunities for growth and change. For example, we describe age-related experiences, such as the transition to middle school, that are associated with some struggling children getting back on track and certain well-functioning children experiencing distress. In this third edition, we continue to provide up-to-date coverage of models describing developmental cascades, the accumulating consequences of multiple transactions across domains, levels, and systems. These new constructs emphasize the integrative and dynamic nature of development and psychopathology.

The third theme takes into account the *child in context* and calls attention to the multiple settings in which the child is embedded. Discussions throughout the text are intended to highlight the many ways in which children and their disorders are understood in larger social contexts (e.g., families, schools and communities, cultures, and historical eras). In the third edition, new summaries provide information on children's mental health in global context, as well as additional research findings comparing children's adjustment and maladjustment from diverse cultural backgrounds and in various countries.

The fourth theme involves a *broad focus on the whole child,* rather than a narrow focus on disorder, developmental delay, or impairment. This holistic appreciation of the child emphasizes patterns of interests, abilities, and strengths. We make sure that our case studies include this kind of information to remind students as often as possible that the diagnosis of a particular disorder does not provide all the important information about a child. We need to appreciate the everyday joys and special accomplishments that are part of all children's lives. In addition, we believe that this holistic focus provides a number of opportunities to talk about the stigma associated with mental illness and to encourage awareness, tolerance, respect, and compassion for children and adolescents who struggle with disorders.

Our hope is that this book will enable students to think about disorders in the same way that caring adults think about disorders they encounter every day—in terms of an individual child who is coping with distress and dysfunction: a boy or girl of a certain age, with a specific temperament, characteristic strengths, and personal history and a family and a network of friends embedded in a community and culture. We believe that we have written a textbook that places the child at the center of comprehensive and meaningful information, reflecting the most up-to-date understandings of child and adolescent psychopathology, in a format designed to support learning and understanding.

Key Features

In addition to the previously discussed case studies woven throughout, our textbook offers a variety of feature boxes that highlight important topics of interest for students. The themes covered in these boxes are (1) The Child in Context, (2) Clinical Perspectives, (3) Risk and Resilience, and (4) Emerging Science. For study and review, each chapter includes a chapter summary and list of key terms that appear in boldface in the text.

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Supporting Resources

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- **Online Instructor's Manual.** This supplement, prepared by Rebecca Fraser-Thill, contains valuable resources for preparing for class, including chapter outlines, lecture topics, YouTube video suggestions, and class activities.
- **Online Microsoft PowerPoint Lecture Outlines.** Prepared by Rebecca Fraser-Thill, these handy and accessible lecture outlines are a great starting point for helping instructors prepare for class.

Acknowledgments

We wish to thank the many individuals who have inspired, challenged, encouraged, and supported us from the very beginning of this project to the final revisions of the third edition. Although our two names are on the cover, we are deeply aware that our text reflects the work of countless others whose research studies and clinical insights we have cited and summarized. We thank them for their contributions to this text and to the field of developmental psychopathology.

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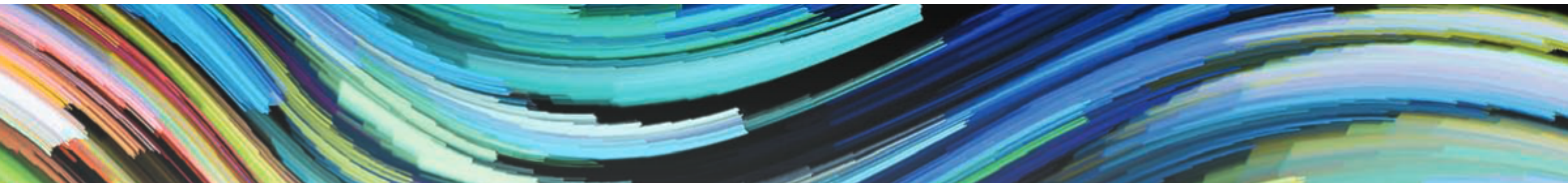

1 Introduction

CHAPTER OUTLINE

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BOX 1:2 THE CHILD IN CONTEXT: The Stigma of Mental Illness

WHEN WE THINK ABOUT childhood and growing up, images of wonder, energy, excitement, and joy are common. Babies sharing first smiles and taking first steps; kindergarteners singing loud songs and looking forward to family vacations; children reading books, riding bikes, and sleeping over with friends; teens studying for exams, learning to drive, and falling in love. In the midst of all this growth and change, however, we notice children who are almost always sad, worried, afraid, or angry. We meet children who believe that they are bad, that they have no control over their lives, that the world is an awful place. There are children who lash out at others, and some who withdraw from relationships. Some of these children exhibit patterns of feelings, thoughts, and behaviors that are best understood as psychological disorders.

The goal of this textbook is to provide a basic understanding of these children and their disorders, and of the theories, methodologies, and findings of developmental psychopathology. We need to understand so that we may meaningfully describe the psychological disorders of infancy, childhood, and adolescence. We need to understand so that we can identify the numerous factors that increase vulnerability to psychopathology. We need to understand so that we can design appropriate interventions for struggling children. We need to understand so that we can increase awareness and empathy for children who deserve to be treated with dignity and respect. And we need to understand so that we can provide the necessary support and resources to families, schools, and communities.

Our approach in writing and organizing this textbook is based on the central premise of **developmental psychopathology**, which suggests that we gain a better understanding of children's disorders when we think about those disorders *within the context of typical development*. We believe that infant, child, and adolescent psychopathology can be understood only by placing descriptions of disorders against the background of usual emotional, cognitive, and behavioral development. We also believe that it is necessary to acknowledge the everyday problems and difficult phases that characterize typical child development, and to make clear both the connections and the distinctions between adaptation and maladaptation. We present discussions of children's disorders in a sequence that follows the child's own growth from birth through early adulthood and emphasizes that both children and their disorders develop and change over time.

Defining Disorders of Infancy, Childhood, and Adolescence

Emma is a five-and-a-half-year-old girl whose parents are becoming increasingly concerned about her. She has always been somewhat quiet and reserved, taking her time to check out unknown situations and new children, but usually warming up to join activities and play time. As kindergarten approaches, Emma is exhibiting more anxiety around others, preferring to stay home, close by her mother. She is displaying new fears about the dark, about strangers, and about getting lost in the new school building. Emma is also crying more frequently and seems almost constantly on edge.

Should Emma's parents call the pediatrician? The kindergarten teacher? A child psychologist? Should they wait a few months to see if Emma grows out of this phase and hope that waiting doesn't make things worse?

Understanding psychopathology is complicated. Parents, teachers, and children themselves are often confused about whether a particular pattern of feelings, thoughts, and behaviors reflects an actual disorder, and if so, whether that disorder involves minor, moderate, or major maladjustment. One of the first steps leading to accurate and useful conceptualizations of psychopathology is to recognize the many connections between typical and atypical development. In Emma's case, it is important to consider other children's experiences of wariness and fear, differences among children's temperaments, and how much her distress interferes with daily life.

To provide some context for decision making about Emma, it may be helpful to review some of the many approaches to the field of child development itself. Models of childhood and child development have been influenced by historical notions of children as miniature adults, blank slates, savages, and innocent beings, as well as more recent images of "children" as innately and surprisingly competent individuals (Hwang, Lamb, & Sigel, 1996; Mintz, 2006). Depending on the model, our understanding of childhood may lead us to expect that almost all typically developing children will engage in idyllic play, or skill learning, or avoidance of danger. However, we need to think realistically about whether most children amuse themselves for hours on end, or practice the piano or take swimming lessons without complaint, or never run into the street without looking for cars.

Most contemporary theorists, researchers, and clinicians emphasize that a useful model of typical development requires a dynamic appreciation of children's strengths and weaknesses as they experience salient, age-related challenges (see Table 1:1). A model like this takes into account the complexities of individual, familial, ethnic, cultural, and societal beliefs about desirable and undesirable outcomes for children and adolescents. Against this multilayered background of typical child development, we are then able to identify children whose distress and dysfunction are exceptional.

TABLE 1:1 Salient, Age-Related Issues of Development

Infancy

Major issue: Formation of an effective attachment

Additional issues:

- Basic state and arousal regulation
- Development of reciprocity
- Dyadic regulation of emotion

Toddler Period

Major issue: Guided self-regulation

Additional issues:

- Increased autonomy
- Increased awareness of self and others
- Awareness of standards for behavior
- Self-conscious emotions

Preschool Period

Major issue: Self-regulation

Additional issues:

- Self-reliance with support (agency)
- Self-management
- Expanding social world
- Internalization of rules and values

School Years

Major issue: Competence

Additional issues:

- Personal efficacy
- Self-integration
- Competence with peers
- Competence in school

Adolescence

Major issue: Individuation

Additional issues:

- Autonomy with connectedness
- Identity
- Peer network competence
- Coordinating school, work, and social life

Transition to Adulthood

Major issue: Emancipation

Additional issues:

- Launching a life course
- Financial responsibility
- Adult social competence
- Coordinating work, training, career, and life

From: Sroufe (2013). The promise of developmental psychopathology: Past and present. *Development and Psychopathology,* 25, 1222.

What Is Normal?

Note that we primarily use the terms typical *and* atypical *when referring to development and patterns of adaptation and maladaptation. Sometimes, however, we use the terms* normal *and* abnormal. *Although we understand that there may be some negative connotations to these terms, our intent is to use them as objectively as possible and to make connections with long-standing and current descriptions of abnormal psychology.*

Common descriptions of normality and psychopathology often focus on (1) **statistical deviance**, the infrequency of certain emotions, cognitions, and/or behaviors; (2) **sociocultural norms**, the beliefs and expectations of certain groups about what kinds of emotions, cognitions, and/or behaviors are undesirable or unacceptable; and (3) mental health perspectives, theoretical or clinically based notions of distress and dysfunction.

Statistical Deviance

From a statistical deviance perspective, a child who displays too much or too little of any age-expected behavior (such as dependency or assertiveness) might have a disorder. Children of a certain age above the "high number" cutoff, or below the "low number" cutoff, would meet the criterion for disorder (see Fig. 1:1). Thinking again about Emma, we would be more concerned about a possible disorder if she is much more anxious and fearful than her peers, and less concerned if many of her peers are also experiencing these difficulties.

Sociocultural Norms

From a sociocultural norm perspective, children who fail to conform to age-related, gender-specific, or culture-relevant expectations might be viewed as challenging, struggling, or disordered. Keep in mind, however, that there is significant potential for

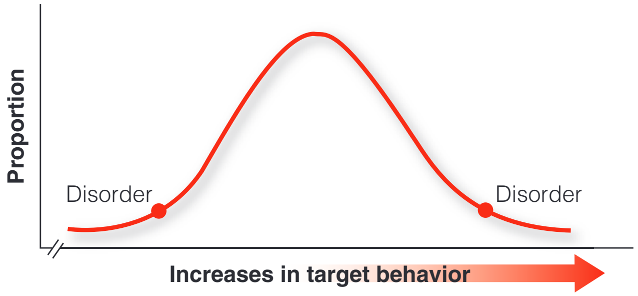

FIGURE 1:1 Statistical deviance model of disorder.

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disparity among various sociocultural groups and norms. For instance, pressure in a particular neighborhood or peer group to prove oneself with belligerent or aggressive behavior may contribute to the diagnosis of psychopathology by others outside that neighborhood or peer group. When we consider Emma's fears and anxieties this time, we would be focused on specific social and cultural expectations for a young girl's independence. Do her feelings and behaviors fall within a generally acceptable range? Depending on the particular social and cultural settings, norms will vary, but there will always be certain patterns of emotion, cognition, and behavior that are considered evidence of psychopathology.

Mental Health Perspectives

From a mental health perspective, a child's psychological well-being is the key consideration. The landmark report of the U.S. Surgeon General (U.S. Department of Health and Human Services, 2000, p. 123) states that "mentally healthy children and adolescents enjoy a positive quality of life; function well at home, in school, and in their communities; and are free of disabling symptoms of psychopathology." Using this criterion, children who have a negative quality of life, who function poorly, or who exhibit certain kinds of symptoms might have a disorder. Again, we think of Emma. From this perspective, what matters most is how Emma's fears and anxieties make the transition to kindergarten distressing, and whether she is able to participate comfortably in various academic and social tasks.

BOX 1:1

The Child in Context

The Irreducible Needs of Children

Our understanding of children's psychological disorders is informed continuously by our understanding of children's usual development. When we think about what happens in children's lives, we need to remember not only the range and variety of hoped-for outcomes, but also the basic, bottom-line components of "what every child must have to grow, learn, and flourish." Two prominent children's advocates, T. Berry Brazelton and Stanley Greenspan, have described these essential needs (Brazelton & Greenspan, 2000). They include

- The need for ongoing nurturing relationships
- The need for physical protection, safety, and regulation
- The need for experiences tailored to individual differences
- The need for developmentally appropriate experiences
- The need for limit setting, structure, and expectations
- The need for stable, supportive communities and cultural continuity

In our descriptions and discussions of children's disorders, we will refer repeatedly to prevention and intervention strategies that are based on these needs. Satisfaction of these needs—from birth through adulthood—is an index of our concern, compassion, and commitment to children's well-being.

The Role of Values

Closer examination of these definitions reveals that each one raises questions about the role of values in conceptualizations of mental health and psychopathology (Sonuga-Barke, 1998; Wakefield, 2002). Box 1:1 provides an example of a value-informed set of children's needs for psychological well-being. A key value judgment involves distinctions between adaptation and maladaptation and personal or group standards of *adequate or average* adaptation, or *optimal* adaptation (Offer, 1999). *Adequate adaptation* has to do with what is considered okay, acceptable, or good enough. *Optimal adaptation* has to do with what is excellent, superior, or "the best of what is possible." The following cases illustrate poor adaptation, adequate adaptation, and optimal adaptation.

Poor Adaptation

The Case of Dylan

Dylan is an eight-year-old boy who lives with his mother and two older siblings in an affluent suburb. He is currently struggling in a variety of ways and in multiple contexts. He is having trouble with the increasingly demanding academics in his private school and is usually ignored by his classmates. At home, Dylan is angry and withdrawn.

Dylan's mother had a history of depression before having children. After years of healthy functioning, she became depressed following Dylan's birth, a problem that she has struggled with throughout his early childhood. Dylan was described as a "difficult" baby, who cried frequently and slept poorly. As a toddler, he had frequent temper tantrums that often involved biting and scratching. In fact, Dylan's parents were asked to withdraw him from his preschool because of his poor emotional and behavioral regulation. When these issues with Dylan escalated, so did his mother's depression, as well as conflict between his parents, who disagreed on what should be done to manage Dylan's behavior.

Dylan's father died just before the start of kindergarten. Following the unexpected loss, Dylan's anxiety, always present but overshadowed by his behavior problems, became increasingly evident. Over the next two years, both his first- and second-grade teachers provided Dylan with extra support and encouragement, but with little positive effect. At the beginning of third grade, the school counselor suggested to Dylan's mother that they see a child psychologist. Although Dylan's mother wanted to comply with the referral, she felt overwhelmed by the challenges of single parenting and her depression and never arranged for Dylan to see a therapist. As his classmates became more focused on developing friendships and enjoying academic experiences, Dylan felt increasingly isolated, lonely, and unhappy. ■

Adequate Adaptation

The Case of Antoine

Antoine is a six-year-old boy who is currently in his third foster home. Antoine was severely neglected early in his life and was removed from his biological mother's home when he was nine months old by the county's child protection services. After two brief foster placements, Antoine has been in a stable and nurturing foster home for two years.

Although his teachers have no concerns about his basic academic skills, they note that Antoine does have difficulty paying attention and that he is frequently impulsive. Antoine has several friends that he likes to play with, but he is seldom sought out as a playmate by other children. His feelings are hurt easily, and he sometimes misinterprets the intentions of others, feeling that they are out to get him. Consequently, he is quicker than other children to resort to name-calling or shoving when he is upset.

Antoine is more comfortable and relaxed at home with his foster parents, but he asks often if he will have to move away from them. While being as reassuring as possible, his foster parents have acknowledged that they do not know how long Antoine will be with them. He clearly worries about leaving his current home, and although his psychotherapist attempts to provide support for his concerns, Antoine is adamant that he does not want to talk about any possible relocation. ■

Optimal Adaptation

The Case of Jenna

Jenna is a six-year-old girl who, like Dylan and Antoine, suffered an early loss. Jenna's mother was a single parent who died in an automobile accident when Jenna was two. Following her mother's death, Jenna went to live with her maternal grandparents. Although distraught at the loss of their daughter, they dedicated themselves to caring for Jenna to the best of their ability.

In addition to her grandparents, Jenna is involved with and supported by her many relatives who live nearby and include her in their lives. Jenna's teachers describe her as bright and enthusiastic in the classroom. She is excited about learning to read and seems to have a special aptitude for math. Jenna is well liked by both the girls and the boys in her class, and she is often invited to play dates and birthday parties.

At home, Jenna enjoys hearing stories about her mother and thinking of how loving and proud her mother would be. There are times, of course, when Jenna and her grandparents cry together about Jenna's mother. And as Jenna gets older, she may become more aware of her absent biological father and seek to learn more about him. But Jenna and her grandparents are able to take comfort in each other and in the warm and secure home that they have created together. ■

Even with the traumatic beginnings of their childhoods, both Antoine and Jenna are moving in a positive developmental direction, in contrast with Dylan. Still, Antoine's adequate adaptation is different from Jenna's optimal adaptation in the degree to which each successfully manages past traumas and current challenges, the quality of caregiving and friendship, and the potential for growth in coming years. Neither adequate nor optimal adaptation guarantees smooth sailing throughout development. Challenges are inevitable, and struggles themselves are not evidence of disorder. Indeed, challenges and struggles are viewed by most developmental psychologists as forces of growth. Sameroff (1993, p. 3), in fact, suggests that "all life is characterized by disturbance that is overcome, and that only through disturbance can we advance and grow. . . . In this view, it is the overcoming of challenge that furnishes the social,

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emotional, and intellectual skills that produce all forms of growth, both healthy and unhealthy."

The Impact of Values on Definitions of Disorder

Other important judgments involving values are tied to specific definitions of disorder. With statistical deviance definitions, it sometimes makes sense to examine *both* extremes of the continuum (e.g., too much intense emotion as well as too little) because we have made a judgment that there is a desirable middle course related to the characteristic in question (again, see Fig. 1:1). At other times, it makes sense to focus only on the "bad" end of the continuum and ignore the "good" end (e.g., too little empathy, but not too much empathy; too little intelligence, but not too much intelligence). In these specific cases, judgments are made that some types of extreme characteristics are to be accepted or even prized.

With sociocultural definitions, value judgments are the very basis of definitions of disorder. Whether casual use of mind-altering substances is tolerated or condemned by a particular sociocultural group influences conceptualizations of pathological addiction. Whether independence or connectedness is more valued influences conceptualizations of pathological dependency.

With mental health definitions, the values of psychologists, psychiatrists, and clinical social workers are embedded in both scientific and lay community decision making. Returning to the Surgeon General's description of psychological well-being, clinicians must evaluate whether a young person's life is characterized by a positive quality, adequate functioning, and few symptoms. Whether these particular benchmarks represent the least we can do for children and adolescents, or the best we can hope for, is yet another value judgment. Indeed, recent discussions of models of mental health have emphasized the difference between the absence of mental illness and the presence of flourishing. For example, to enhance individuals' opportunities for flourishing, Keyes (2007) argues for increased resources for programs that focus on the promotion of mental health across the lifespan, as well as for programs that focus on the prevention and treatment of mental illness.

Digital Vision/Getty Images

Cultural norms influence developmental expectations.

Definitions of Psychopathology and Developmental Psychopathology

In this textbook, we will work within the framework provided by the following definitions of disorder. The term ***psychopathology*** *refers to intense, frequent, and/or persistent maladaptive patterns of emotion, cognition, and behavior.* ***Developmental psychopathology*** *extends this description to emphasize that these maladaptive patterns occur in the context of typical development and result in the current and potential impairment of infants, children, and adolescents.*

Rates of Disorders in Infancy, Childhood, and Adolescence

If definitions of disorder are problematic, estimates of rates of disorder are even more so. The multipart task of estimating rates of disorder includes (1) identifying children with clinically significant distress and dysfunction, whether or not they are in treatment (and most of them are not); (2) calculating levels of general (e.g., anxiety disorders) and specific (e.g., generalized anxiety, separation anxiety disorder, phobia) psychopathologies and the impairments associated with various disorders; and (3) tracking changing trends in the identification and diagnosis of specific categories of disorder, such as autism spectrum disorder, attention deficit hyperactivity disorder (ADHD), and depression (Costello, Erkanli, & Angold, 2006; Maughan, Iervolino, & Collishaw, 2005). Personal, clinical, and public policy implications must be considered when collecting these data. For instance, specific diagnoses may or may not qualify for insurance coverage; or increases or decreases in the diagnosis of certain disorders may have an impact on the staffing of special education programs in schools.

Frequencies and patterns of distributions of disorders in infants, children, and adolescents can be estimated with varied methodologies and within varied groups. These frequencies and patterns are the focus of the field of **developmental epidemiology** (McLaughlin, 2014). Prevalence and incidence rates are both measures of the frequency of psychopathology. **Prevalence** refers to the proportion of a population with a disorder (i.e., all current cases of the disorder); **incidence** refers to the rate at which new cases arise (i.e., all new cases in a given time period). Random sampling of a general population is one option for estimating prevalence (e.g., using surveys, phone questionnaires, and/or detailed psychopathology screening instruments). For example, the investigators in the Great Smoky Mountains Study interviewed over 1,400 participants up to nine times between 9 and 21 years of age (Copeland, Shanahan, Costello, & Angold, 2011). Sampling in schools, using teachers' assessments, is another option. Alternatively, samples can focus on disorders that are seen in children's primary care and mental health clinics.

Whatever method is selected, there can be no doubt that many children struggle with clinically significant disorders. Recent data from the National Health and Nutrition Examination Study, sponsored by the Centers for Disease Control and Prevention (CDC), estimate that 13% of children between 8 and 15 years of age in the United States met the criteria for any disorder (Merikangas et al., 2009). These rates are comparable to those reported in a large-scale, meta-analytic review of the prevalence of disorders in children and adolescents from 27 countries and every world region (Polanczyk, Salum, Sugaya, Caye, & Rohde, 2015; see Fig. 1:2).

Allocation of Resources, Availability, and Accessibility of Care

Although it is always the case that children's psychopathology deserves our attention, our compassion, and our best clinical responses, a number of critical issues demand renewed and innovative efforts. Even with research-based knowledge about ways to promote children's physical and mental well-being that has been available for years (e.g., Weisz, Sandler, Durlak, & Anton, 2005), parents, schools, communities, and policy makers have struggled to allocate often-scarce emotional, social, and financial resources. One continuing difficulty involves access to care. Recent investigations suggest that fewer than half of children and adolescents who need mental health interventions receive them (Costello, He, Sampson, Kessler, & Merikangas, 2014; Merikangas et al., 2011; also see Fig. 1:3). Indeed, "the current state of affairs not only fails to take responsibility for the health and welfare of children, it also fails to recognize the costs and waste in economic and human potential" (Tolan & Dodge, 2005, p. 602).

Barriers to care are widespread and have been extensively summarized (Owens et al., 2002; Stiffman et al., 2010). Structural barriers include limited policy perspectives, disjointed systems, lack of provider availability, long waiting lists, inconveniently located services, transportation difficulties, and inability to pay

Outcome	N studies	Sample size
Any anxiety disorder	41	63130
Any depressive disorder	23	59492
MDD	22	68382
ADHD	33	77297
Any disruptive behavior disorder	19	38324
ODD	28	69799
CD	28	73679
Any mental disorder	41	87742

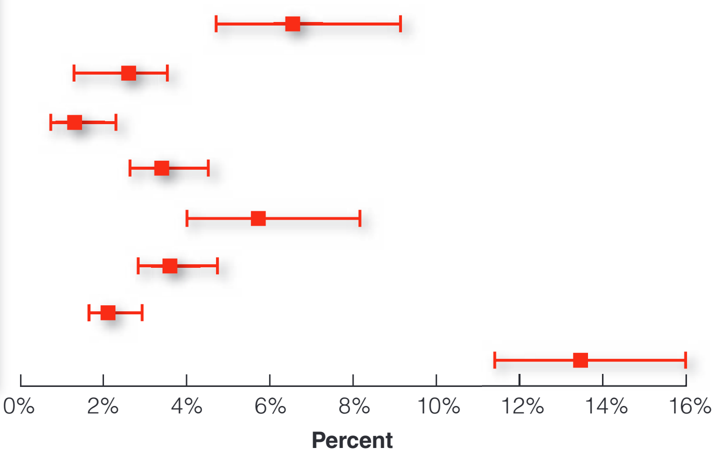
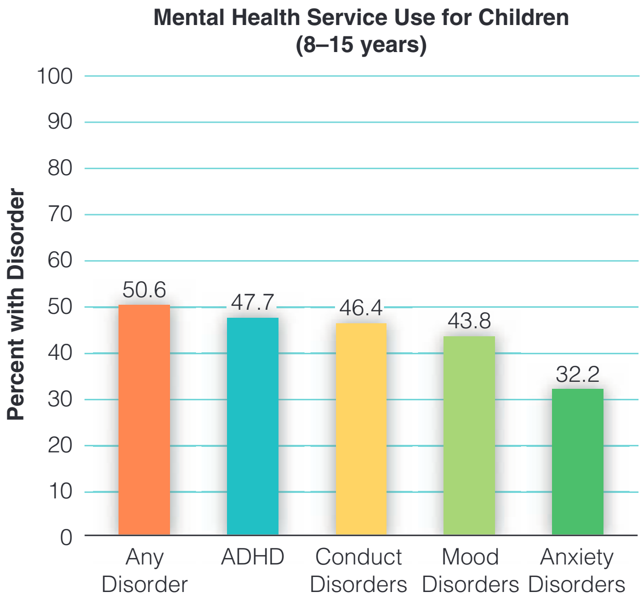


FIGURE 1:2 Worldwide prevalence estimates of specific disorders in children and adolescents.

Source: From Polanczyk, Salum, Sugaya, Caye, & Rohde, 2015, p. 356 , http://web.a.ebscohost.com/ehost/detail/imageQuickView?sid=1cbf8d11-c8fd-4251-812b-d4c8ce4be24a@sessionmgr4005&vid=0&ui=30637764&id=101158041&code=101158041&parentui=101158041&db=iqv&tag=AN



Demographics Associated with Mental Health (MH) Service Use:

- Females are 50% less likely than males to use MH services.
- 12–15-year-olds are 90% more likely than 8–11-year-olds to use MH services.
- No differences were found between races for mood, anxiety, or conduct disorders. Mexican Americans and other Hispanic youth had significantly lower 12-month rates of ADHD compared to non-Hispanic white youth.

Data courtesy of CDC

FIGURE 1:3 Percentage of children and adolescents with various disorders who receive mental health services.

and/or inadequate insurance coverage. Barriers related to perceptions about mental health difficulties include the inability to acknowledge a disorder, denial of problem severity, and beliefs that difficulties will resolve over time or will improve without formal treatment. Barriers related to perceptions about mental health services involve a lack of trust in the system, previous negative experiences, and the stigma related to seeking help.

When children do receive psychological care, the cost of appropriate intervention, whether oriented to the individual, the family, or the school, is often prohibitive, and insurance coverage varies widely. Until recently, most health insurance policies placed restrictive limits on reimbursement of mental health coverage. State and federal legislation to eliminate these kinds of restrictions has made progress of late, but many families still face such coverage limits. The availability of effective therapies and treatments for a variety of psychological disorders is significant only if infants, children, and adolescents are able to take advantage of them.

Inadequate money for prevention efforts is also a public policy dilemma, especially given recent estimates that the economic burden of treatment of child and adolescent mental illness surpasses $10 billion (Hsia & Belfer, 2008; National Institute of Mental Health, 2004). There is abundant research, for example, documenting the positive psychosocial impact of early educational programs, but full funding and increased access remain difficult. And for children from minority and disadvantaged backgrounds, access to treatment and prevention programs is even more problematic

(Bringewatt & Gershoff, 2010; Murry, Heflinger, Suiter, & Brody, 2011).

Tolan and Dodge (2005, pp. 607–608) propose a four-part model for a comprehensive system that "simultaneously promotes mental health within normal developmental settings, provides aid for emerging mental health issues for children, targets high-risk youth with prevention, and provides effective treatment for disorders: (1) Children and their families should be able to access appropriate and effective mental health services directly; (2) Child mental health should be a major component of healthy development promotion and attention in primary care settings such as schools, pediatric care, community programs, and other systems central to child development; (3) Efforts should emphasize preventive care for high-risk children and families; (4) More attention must be paid to cultural context and cultural competence." These kinds of proposals lay the groundwork for resource allocation and policy implementation that will have long-standing consequences for the well-being of countless children.

The Globalization of Children's Mental Health

Discussions of mental health and mental illness involving resource allocation and public policy increasingly emphasize global perspectives that require careful thinking about Western models of development, disorder and intervention, as well as the vastly different experiences of children who live in resource-rich versus resource-poor countries. Patel, Flisher, Nikapota, and Malhotra (2007) and Omigbodun (2008) identify rapid social change, urbanization and urban poverty, and inadequate health and educational services as key factors that increase children's vulnerability to psychopathology in resource-poor countries in Eastern and Central Europe, Africa, Asia, Latin America, and the Pacific region. In these countries, awareness of mental illness issues and promotion of mental health are limited by allocation of scarce resources to urgent medical needs, a lack of formal mental health policies and programs, and too few mental health professionals. The costs of impairment and lost potential are enormous (Belfer, 2008).

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Far too many children experience displacement, hardship and loss; the negative impact on physical and psychological well-being is enormous.

We must also emphasize that, across the globe, millions of children are struggling in the face of unimaginable trauma, including exposure to disease and death, armed conflict, abandonment and homelessness, and dislocation (Omigbodun, 2008; Vostanis, 2012). These terrible situations require increased awareness, advocacy, and a responsibility to provide interventions to ensure children's safety and well-being. Interventions include both prevention efforts and treatment for those with various disorders. To facilitate the success of interventions, mental health professionals must consider how to implement treatments in countries where the health and welfare systems work differently (or are nonexistent), as well as how to provide treatment to children who are difficult to reach (Atilola, 2015; Patel, 2012). Treatments must take into account local and culture-based approaches and community caretaking and service models (Atilola, 2015). Holistic approaches with achievable goals, embedded in health, social, and educational networks, have been proposed. These multicomponent treatments focus on children and adolescents, on families, and on communities and systems (Patel, 2012; Wuermli, Tubbs, Petersen, & Aber, 2015). Finally, the development and implementation of globally useful interventions require recognition of the current disconnect between where research takes place and where the need is greatest, as well as a commitment to do better on behalf of the world's children (Atilola, 2015; Patel, 2012; Wuermli et al., 2015).

The Stigma of Mental Illness

A final issue concerns the continued and painfully unnecessary **stigmatization** of individuals with psychopathology (Corrigan, 2005; Hinshaw, 2005; Pescosolido, 2007). For parents concerned about their children's distress or dysfunction, there is almost always shame, fear, and/or blame (dos Reis, Barksdale, Sherman, Maloney, & Charach, 2010; Heflinger, Wallston, Mukolo, & Brannan, 2014). For children,

BOX 1:2

The Child in Context

The Stigma of Mental Illness

Ignorance and intolerance have long been identified as critical issues for those struggling with mental illness. Much of the available research focuses on adults' limited and inaccurate knowledge of and negative attitudes toward other adults with mental illness. In study after study, the data suggest that most adults tend to think primarily in terms of serious psychopathology (such as schizophrenia and bipolar disorder), believe that individuals are responsible for their disorders, and overestimate the likelihood of aggression and violence in adults with mental illness; stigmatization, in terms of ridicule, avoidance, and rejection, is rampant.

Adults also exhibit distorted beliefs and harmful attitudes toward children who are struggling with mental illness, as well as toward their families. Adults both trivialize the reality of children's distress and dysfunction by suggesting that children are overdiagnosed, overmedicated, and poorly parented, and exaggerate the extent to which these same children are unpredictable, dangerous, and deviant (Giummarra & Haslam, 2005; Pescosolido et al., 2008).

How do children and adolescents compare to their adult counterparts? Sadly, their beliefs and attitudes are all too similar. Surveys of children's labels for those dealing with mental illness—including *crazy*, *nuts, retarded, psycho*, and *lunatic*—reveal their aversion (Bailey, 1999; Wahl, 2002). Although children display increasing knowledge about the causes of mental illness as they age, their attitudes reflect ongoing stigmatization related to views of those struggling with mental illnesses as violent, unpredictable, blameworthy, and beyond hope (Corrigan et al., 2007; Watson, Miller & Lyons, 2005). Stigma is often associated with exclusion, and evidence suggests that adolescents worry about the perceived social and personal risks of friendships with peers with mental health problems (O'Driscoll, Heary, Hennessy, & McKeague, 2014). It is not surprising, then, to find that many children and adolescents with disorders "self-stigmatize"; that is, they internalize these negative beliefs and attitudes and exhibit low levels of self-esteem and self-efficacy (McKeague, Hennessey, O'Driscoll, & Heary, 2015; Moses, 2009).

Given that children are exposed to multiple sources of information and attitudes, including parents, peers, and the media, how can stigmatization be prevented or minimized? Many types of programs, from those designed for individual classrooms to those intended as national demonstration projects, have shown improvements in knowledge and attitudes (e.g., Corrigan, 2005; Pitre, Stewart, Adams, Bedard, & Landry, 2007; Watson et al., 2004). Successful programs share several emphases. They must begin early; target multiple dimensions of knowledge and attitudes; be developmentally appropriate; and include individuals, families, and communities. Children can learn lies or they can learn facts; they can display ugly attitudes or they can display compassion. The choices are theirs, and ours.

experiences of secrecy and rejection are commonplace. Lack of respect and lack of access to care (again) are often the results of personal, familial, social, and institutional stigmas (Heflinger & Hinshaw, 2010; Williams & Polaha, 2014). A clinician seeking parental permission to obtain information from a child's teacher is not surprised when a father says, "You know, doctor, we'd prefer that the school not know anything about this. We haven't told his brothers or his grandparents. No one else needs to know." Or a teacher, preparing a child to begin attending a social skills group the following week, is asked, "Why do I have to leave your room, Mrs. Stern? I don't want to go with those kids. They're weird. I'm not weird. I'm not crazy."

Mukolo, Heflinger, and Wallston (2010) identify (1) several dimensions of stigma, including negative stereotypes, devaluation, and discrimination; (2) two targets of stigma, the individual and the family; and (3) two contexts of stigma, the general public and the self/individual. Both Mukolo et al. (2010) and Heflinger and Hinshaw (2010) urge researchers to continue to investigate the multiple ways that stigma complicates the experiences of children with mental disorders and their families. Box 1:2 provides additional perspective on this kind of stigma. Understanding the development, course, and treatment of psychopathology in infants, children, and adolescents represents only half the battle. Increasing our tolerance and compassion for the diverse group of those who are diagnosed with psychopathology and believing in the inherent worth of each struggling infant, child, and adolescent make up the other, far more difficult, half.

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Key Terms

Developmental psychopathology (p. 2)
Statistical deviance (p. 3)
Sociocultural norms (p. 3)
Developmental epidemiology (p. 7)
Prevalence (p. 7)
Incidence (p. 7)
Barriers to care (p. 7)
Stigmatization (p. 9)

Chapter Summary

- *Developmental psychopathology* refers to intense, frequent, and/or persistent maladaptive patterns of emotion, cognition, and behavior considered within the context of typical development and resulting in the current and potential impairment of infants, children, and adolescents.
- *Prevalence* refers to all current cases of a set of disorders, whereas *incidence* refers to new cases in a given time period. Although specific study results vary, many estimates suggest that significant numbers of children and adolescents struggle with disorders that are associated with serious impairment.
- There are a number of critical issues currently facing the field of developmental psychopathology. For example, too few children who need mental health care have access to that care. Another important issue is the ongoing challenge of overcoming the stigmatization of individuals and families dealing with psychopathology.

2 Models of Child Development, Psychopathology, and Treatment

CHAPTER OUTLINE

The Case of Max
The Case of Anna
The Role of Theory in Developmental Psychopathology
Dimensional and Categorical Models
Physiological Models
Historical and Current Conceptualizations
BOX 2:1 EMERGING SCIENCE: Genomics, Behavior Genetics, and Developmental Psychopathology
Thinking about Max
Thinking about Anna
Psychodynamic Models
Historical and Current Conceptualizations
Thinking about Max
Thinking about Anna
Behavioral and Cognitive Models
Historical and Current Conceptualizations
Thinking about Max
Thinking about Anna
Humanistic Models
Historical and Current Conceptualizations
Thinking about Max
Thinking about Anna
Family Models
Historical and Current Conceptualizations
Thinking about Max
Thinking about Anna
Sociocultural Models
Historical and Current Conceptualizations
Thinking about Max
Thinking about Anna

The Case of Max

Max is eight years old. He can often be found squirming at his second-grade desk, looking out the window, rearranging his pencils, knocking papers on the floor, or talking to the kids sitting nearby. From his teacher's perspective, Max's situation is becoming more and more problematic, and she has referred him for evaluation.

Max's parents recall that his pediatrician described him as "perfectly normal," although they say that he has always been "on the go." Max lives with his father and mother, both of whom graduated from high school, and his siblings. The family lives in one half of a duplex home; Max's maternal grandparents, who emigrated from Honduras, live in the other half.

In kindergarten, Max was described as active and energetic, but his teacher had no significant concerns. In first grade, his difficulties increased over the course of the year, with most problems involving incomplete classwork and bothering other children. Max's school problems have continued in second grade, where his teacher describes him as generally disorganized and as falling behind in reading and math.

Max's parents provided other information that suggested that his struggles were not everyday problems that would resolve themselves. Beginning in first grade, they noticed that Max was having some problems at home, including irritability and impulsivity. His parents remembered that these negative emotions and behaviors were more pronounced

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after the school day. Also, Max began to argue and fight more frequently with his 10-year-old brother, and especially with his four-year-old sister. His parents report that Max still enjoys playing with friends in the neighborhood but is becoming increasingly resistant, discouraged, and pessimistic about school. The more stressful family problems coincided with Max's father being laid off from his job as a master electrician. Max's father has spent increasing amounts of time at home, with escalating conflicts between him and Max's mother (who does not work outside the home) about child care and discipline. ■

The Case of Anna

Anna is 14 years old. She spends a lot of her free time alone in her room, feeling unhappy and not doing much of anything. She rarely gets together with other kids, who have mostly stopped asking her to join them. Anna's mother is worried about her sadness and withdrawal and has called her family physician for a referral.

Anna's mother has been a single parent since Anna's birth and is employed as a customer service representative for a health care company. Anna's father has a long history of hospitalizations for both major depression and alcohol abuse. Following several extremely unpleasant exchanges with Anna's mother when he came to visit Anna as an infant and toddler, Anna's father has had no contact with her.

Anna's mother describes Anna's infancy and childhood as normal. Throughout elementary school, Anna was generally quiet and cooperative and received average grades. Although not especially social, she always had a few good friends and was active in sports and with her church youth group. Looking back, Anna's mother remembers that Anna seemed to worry more than most other children, but not to the point where it interfered with her schoolwork or social activities. Her transition to middle school was challenging. Anna's mother reports that Anna seemed somewhat overwhelmed by the size of the school and had difficulty adjusting to changing classes and increased homework. Anna had less contact with her elementary school friends and has had trouble making new friendships.

Although Anna does not talk much about her situation, her increasing withdrawal, apathy, and occasional irritability are apparent. She no longer participates in athletics, has dropped out of her church youth group, and spends most of her time at home alone. She is increasingly behind in her schoolwork, and her grades have dropped significantly. ■

The Role of Theory in Developmental Psychopathology

Models of development, psychopathology, and treatment allow us to organize our clinical observations of children and our research findings into coherent, informative accounts. In this chapter, the cases of Max and Anna will illustrate key concepts related to typical developmental processes, the emergence of disorder, and intervention goals and strategies. For introductory purposes, the sections on Max and Anna present somewhat simplified examples. In the next chapter, and throughout the rest of this book, the models will become increasingly complex, integrated, and real.

Before the practices and principles of developmental psychopathology are described in Chapter 3, we summarize here the historical models that have contributed valuable ideas to our contemporary understanding. Although these models are presented separately and are often conceptualized as complete and comprehensive in and of themselves, they are *not* mutually exclusive. It is more useful to think of these models as providing different and complementary perspectives on the complicated phenomena of development, psychopathology, and treatment.

Dimensional and Categorical Models

To provide additional background for the upcoming summaries, it is useful to consider how various definitions of disorder correspond with dimensional versus categorical models of psychopathology. **Dimensional models of psychopathology** emphasize the ways in which typical feelings, thoughts, and behaviors gradually become more serious problems, which then may intensify and become clinically diagnosable disorders. With dimensional models, there are no sharp distinctions between adjustment and maladjustment. Dimensional models also are referred to as *continuous* or *quantitative*. **Categorical models of psychopathology**, in contrast, emphasize discrete and qualitative differences in individual patterns of emotion, cognition, and behavior. With categorical models, there are clear distinctions between what is normal and what is not. Categorical models are sometimes referred to as *discontinuous* or *qualitative*.

Important differences between dimensional and categorical models are illustrated by thinking about Max and Anna. For instance, do the difficulties experienced by Max and Anna reflect extremes of typical difficulties (dimensional examples), or are they problems of a different sort altogether (categorical examples)? What do parents, teachers, and clinicians gain from the dimensional perspective, which emphasizes the connections between kids who are struggling and kids who are not? And what is gained from the categorical perspective, which instead emphasizes the particular patterns of the problematic emotions, thoughts, and behaviors that give rise to significant maladjustment?

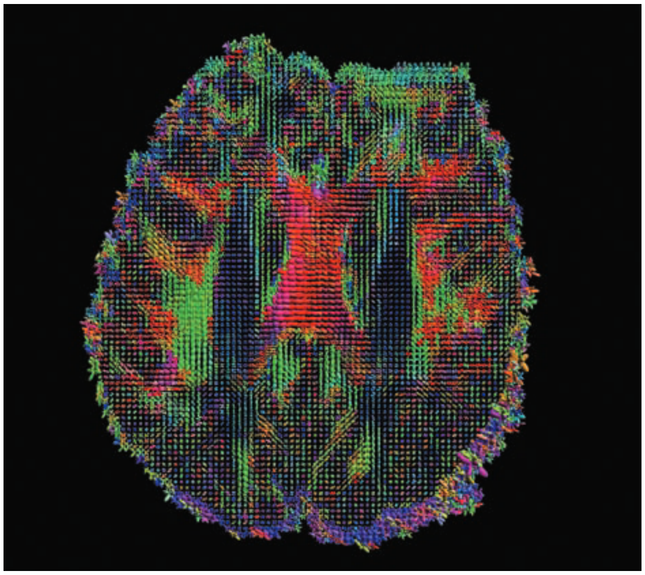
Physiological Models

Historical and Current Conceptualizations

Physiological models propose that there is a physiological (i.e., genetic, structural, biological, or chemical) basis for all psychological processes and events. Historical conceptualizations often focused on the multiple ways in which genes, brain structure and function, and early critical periods influenced, directed, and constrained development. Contemporary conceptualizations are even more complex, taking into account behavior genetics, gene-by-environment effects, and the organization and reorganization of brain networking across development.

Using information from increasingly detailed studies of genetics and from imaging technologies that examine the structure, function, and neurobiology of the brain, we are becoming more knowledgeable about "how a child builds a brain" (Cicchetti, 2002, p. 23). With respect to brain development, we need to consider how children's brains adapt to their environments over time in ways that are similar to all other children, as well as in ways that are idiosyncratically distinct (Johnson, Jones, & Gliga, 2015). We must appreciate both how specific brain regions are associated with particular types of activity (e.g., emotion, memory) and how interactions and connectivity among brain regions contributes to overall brain function (Johnson et al., 2015). In fact, recent work suggests that important information about psychopathology is less likely to come from investigations of "the dysfunction of one specific brain region" and more likely to come from studies of the ways in which "these regions are anatomically and functionally connected" (Matthews & Fair, 2015, p. 405).

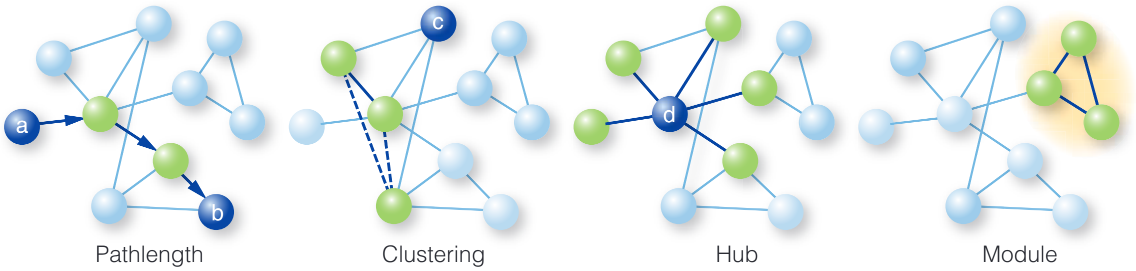
Research focused on the human **connectome**—the diagram of the brain's neural connections—makes use of graph theory, diffusion imaging, and quantitative analysis to map the anatomical and functional features of complex brain networks (Bullmore & Sporns, 2009; Vertes & Bullmore, 2015; http://www.humanconnectomeproject.org/; also see Figure 2:1). In contrast to explanations of microscopic connectivity (e.g., between neurons), explanations of the connectome focus on macroscopic connectivity (e.g., between brain regions), and include descriptions of nodes, hubs, and modules (Collin & van den Heuvel, 2013; also see Figure 2:2). *Nodes* are understood in the context of numbers of connections, distances between them (i.e., the path length of connections), centrality, and clustering. *Hubs* are nodes with extensive connections to other nodes. *Modules* are groups of nodes with strong interconnections. With greater connectivity within and across brain regions, the medial parietal cortex, the cingulate cortex, the superior frontal cortex, and the insula are hubs in the connectome model. Wiring patterns are not fully in place at birth, with some connectivity tracts maturing early (related to, for example, visual, auditory and sensorimotor processing) and other tracts maturing later (related to, for example, more sophisticated cognitive activity). There are also changes related to the balance between segregation and specialization of function and overall integrated functioning (Bullmore & Sporns, 2012; Collin & van den Heuvel, 2013).



Courtesy of the USC Laboratory of Neuro Imaging and Athinoula A. Martinos Center for Biomedical Imaging

FIGURE 2:1 An illustration of neural connections across brain regions. From http://www.humanconnectomeproject.org/

Advances in neuroscience have led to the mapping of brain structures over time and to rich descriptions of development: the "exuberant increase in brain connections is followed by an enigmatic process of dendritic 'pruning' and synapse elimination, which leads to a more efficient set of connections that are continually remodeled throughout life" (Toga, Thompson, & Sowell, 2006, p. 148). Toga et al. (2006) suggest that some brain areas (such as the frontal cortex) develop under "tight genetic control," whereas other areas are more influenced by the environment. In addition, differing levels of gray and white matter growth are observed, with some regions displaying simpler growth trajectories (e.g., ending earlier) and others more complex ones (e.g., ending later) (Nelson, 2011; Vertes & Bullmore, 2015; also see Figure 2:3).



The architecture of networks can be examined using graph theory. Four commonly used measures to probe the organization of the human connectome are (see accompanying figure) path length, clustering, and the presence of hubs and modules (Rubinov and Sporns 2010). The characteristic path length of a brain graph is defined as the average number of steps required to travel between nodes of the network (e.g., brain regions) and is often taken as an (inverse) metric of communication efficiency or information integration of a region. The left-most bottom panel depicts the *path length* between nodes *a* and *b* measuring three steps. The clustering coefficient of a node indicates the extent to which its neighbors are mutually connected (left middle panel), expressing a level of information segregation in neural networks (grained lines indicate the absence of a connection between the neighbors of node *c*). The right middle panel shows a network with a highly connected hub node *d*, indicating a node with an above average dense level of connectivity. Hub nodes play a central position in the overall network. The most right panel indicates the presence of a clustered module, indicated by three nodes (encircled in yellow) being mutually strongly interconnected, but sparsely connected to the rest of the network.

FIGURE 2:2 Architectural structures in the connectome.

Source: DOI: 10.1177/1073858413503712, The Neuroscientist 19(6) 616–628 © The Author(s) 2013, The Ontogeny of the Human Connectome: Development and Dynamic Changes of Brain Connectivity Across the Life Span, Collin & van den Heuvel, 2013, p. 617, Box 1, second figure. Reprints and permissions: sagepub.com/journalsPermissions.nav

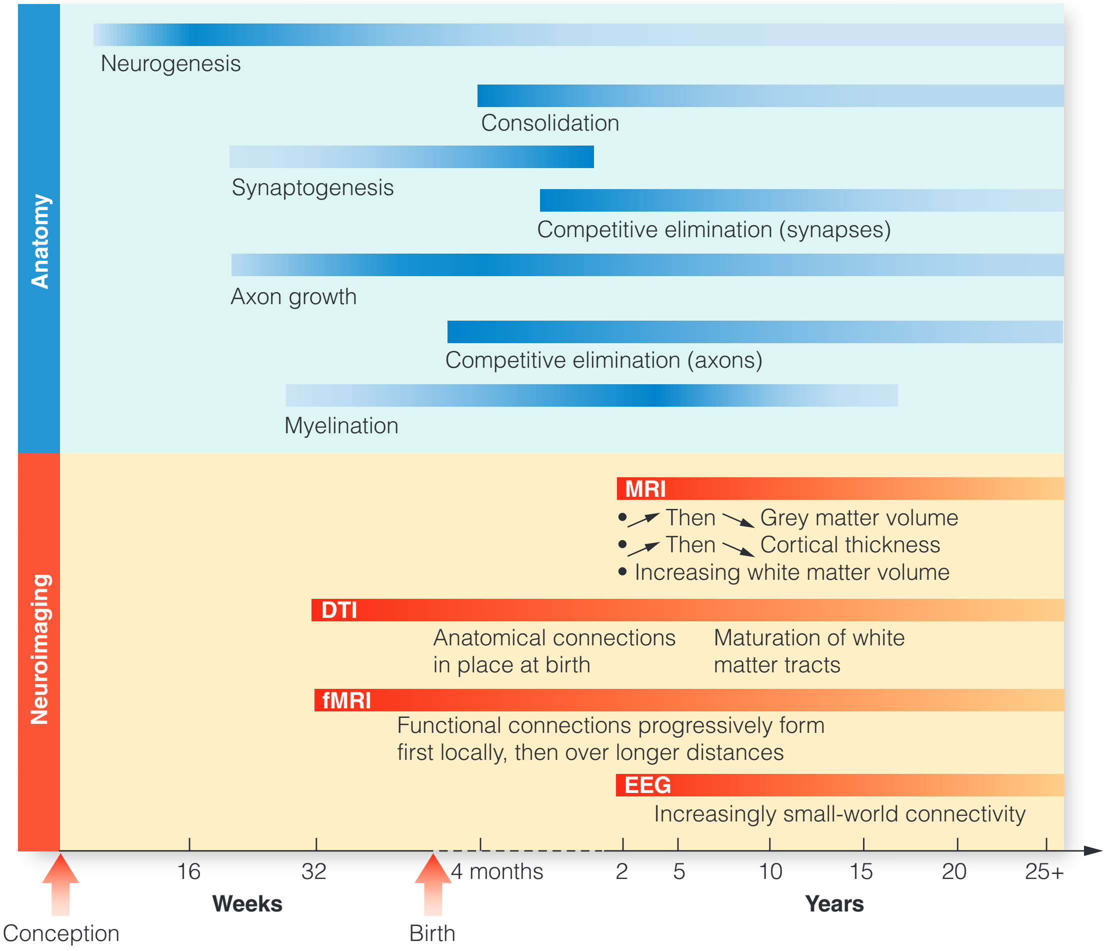


FIGURE 2:3 Sequence of events in brain maturation.

Source: From Vertes & Bullmore, 2015, p. 303, in color.

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Sensitive (or critical) periods in brain development have also been identified, some of which appear domain or component dependent (e.g., in the auditory system, or for specific components of language) (Thomas & Johnson, 2008). For example, researchers have described early periods in which the development of limbic system circuitry leads to later differences in internalizing or externalizing self-regulation (Tucker, Poulsen, & Luu, 2015). A recent review of sensitive periods explored the role of the hormone oxytocin in promoting social development. Feldman (2015, p. 369) suggested that the oxytocin system "cross-talks with the stress, reward, immune, and brain stem systems" and that early "synchrony, the coordination of biology and behavior during social contact" was the mechanism by which the sensitive period influenced brain development, and later social behavior. While these various processes of brain development are similar for typically developing children, differences have also been observed in "perfectly normally functioning individuals" (Nelson, 2011, p. 52). That is, we often expect that differences in brain structure, function, and development will be observed *between* typically and atypically developing children, but we also must understand that there are variations (e.g., deviations from the norm) *within* groups of typically developing children.

With respect to brain–behavior relations, we have shifted from earlier views that emphasized the unidirectional influence of brain structure and function on behavior to models that emphasize bidirectional influences. As one early example of brain–behavior relations, Bell and Fox (1996) documented patterns of physiological and electroencephalograph (EEG) activity in groups of eight-month-olds with various crawling histories. Comparisons of noncrawling infants, beginning crawlers, and experienced crawlers provide evidence that brain development specific to crawling involves an initial overproduction of cortical connections that are then "pruned" with additional crawling experience. This pattern of production and pruning illustrates how the brain's development responds to environmental feedback, resulting in increasingly efficient processing. Another example of experience-dependent brain development involves changes in the connectivity tracts over the first years of life that are associated with higher cognitive functions (Collin & van den Heuvel, 2013). Further, while the "structural topology of communication hubs in the human brain appears to be largely in place by the age of 2 years," there continue to be increases in integration and efficiency of cognitive processing across childhood and adolescence (Collin & van den Heuvel, 2013, p. 622).

Neural plasticity illustrates several physiological processes related to brain development, organization, and reorganization. It involves the development and modification of neural circuits, with now-conclusive evidence that "both positive and negative experiences can influence the wiring diagram of the brain" (Nelson, 2011, p. 57). Numerous examples of neural plasticity, involving changes in anatomy and neurochemistry, have been described for multiple systems (e.g., visual, motor, language, and learning and memory systems). The "primary sensory areas in particular—the brain's first filters to the outside world—exhibit striking examples of experience-dependent plasticity" in early life (Takesian & Hensch, 2013, p. 6). And, whereas we once believed that brain development was relatively complete by age three, and that any damage was permanent and irreversible, we now understand that plasticity is associated with important growth after the age of three and with the lifelong potential for new, improved, and recovered function (see Figure 2.4). As important as plasticity is across development, a balance between plasticity and stability is critical. Indeed, "one of the outcomes of normal development is to stabilize the neural networks initially sculpted by experience. Rather than being passively lost, the brain's intrinsic potential for plasticity is actively dampened" (Takesian & Hensch, 2013, p. 3). Ongoing research explores the mechanisms underlying both plasticity (i.e., molecular triggers) and stabilization (i.e., molecular brakes), and how either might be influenced or modified to treat neurodevelopmental or neurodegenerative disorders. Figure 2:4 illustrates the relation across development between plasticity (i.e., the brain's ability to adapt or change) and the amount of effort required for such change.

Genetics play a critical role in physiological models. We need to understand the many ways that the genetic

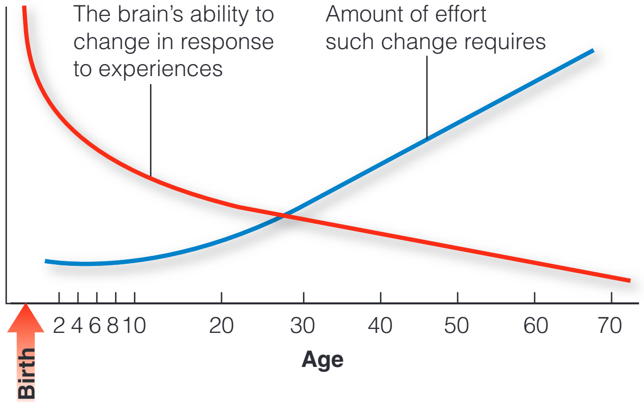

FIGURE 2:4 Brain plasticity and effortful change over time.

Source: from Harvard Center for the Developing Child, http://developingchild.harvard.edu/science/key-concepts/brain-architecture/

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makeup of an individual, or **genotype**, influences the observable characteristics of an individual, or **phenotype**. Our understanding of genetics (i.e., genes and heredity) is ever expanding and involves work in both **behavior genetics** and **molecular genetics**. Research techniques used to investigate the influence of genes include twin, family, and adoption studies, as well as genetic sequencing, genetic screening, and **genome-wide association studies**.

Explanations for both typical development (and all variations of healthy children) and atypical development (and all variations of struggling children) depend on understanding genes, genetic variants, and the processes by which multiple genetic and nongenetic effects lead to physiological and psychological outcomes (see Table 2:1 for key definitions). **Behavior genetics**, the study of the joint effects of genes and environments,

TABLE 2:1 **Some Basic Definitions Related to Genetics**

Additive genetic variance: Individual differences caused by the independent effects of genes that add up.

Allele: One of two or more alternative forms of a gene. These alternative forms may be relatively common or relatively rare in the population of individuals with and without disorders.

Behavior genetics: The study of the joint effects of genetics and the environment; with respect to developmental psychopathology, the focus is on the relationship of genetic variation and psychological traits, symptoms, and disorders.

Chromosome: A structure that contains DNA, and resides in the nucleus of cells.

Deoxyribonucleic acid (DNA): Double-stranded molecule that encodes genetic information.

DNA methylation: An epigenetic process by which gene expression is influenced by adding a methyl group to a chromosome region.

Epigenetics: The processes and mechanisms that influence gene expression.

Epigenome: Epigenetic events throughout the genome.

Gene: The basic unit of inheritance.

Gene expression: Transcription of DNA into messenger RNA (mRNA).

Gene map: Visual representation of the relative distances between genes or genetic markers on chromosomes.

Genome: The complete set of genes. All the DNA sequences of an organism. The human genome contains about 3 billion DNA base pairs.

Genomics: A field of study focused on genes and gene functions.

Genomewide association studies: A research method that involves rapidly scanning markers across the complete sets of DNA, or genomes, of many people to find genetic variations associated with a particular phenotype (such as a disease or disorder).

Genotype: The genetic constitution of an individual.

Heritability: The proportion of phenotypic differences among individuals that can be attributed to genetic differences in a particular population.

Mapping: Linkage of DNA markers to a chromosome and to specific regions of chromosomes.

Molecular genetics: Investigation of the effects of specific genes at the DNA level.

Nonadditive genetic variance: Individual differences due to the effects of alternate forms of genes at a particular locus (i.e., dominance), or multiple genes at different loci (i.e., epistasis).

Nonshared environment: Environmental influences that contribute to differences between family members.

Phenotype: An observed characteristic or behavior of an individual that results from the combined effects of genotype and environment.

Pleiotropy: The phenomenon where a single gene influences more than one phenotypic trait.

Polygenic trait: A trait influenced by many genes.

Shared environment: Environmental factors responsible for resemblance between family members.

Transcription: The synthesis of an RNA molecule from DNA in the cell nucleus.

Whole-genome sequencing: Determining the complete sequence of DNA base pairs for a genome.

TABLE 2:2 Gene-by-Environment Effects and Interactions

Gene-by-environment effects (or correlations) involve differential *exposure* to environments or experiences. There are three types of gene-by-environment effects:

1. *Passive correlations*, in which children are exposed to different environments provided by their genetically related parents. *Examples:* Extraverted children raised by extraverted parents are exposed to more social opportunities; highly intelligent children raised by highly intelligent parents are exposed to more educational opportunities.
2. *Active correlations*, in which children select or create their own environments as a function of their genetic background. *Examples:* Extraverted children seek out other children on the playground; highly intelligent children choose to read or tinker with electronics during unstructured times.
3. *Evocative correlations*, in which children experience different reactions or responses to their genetically influenced emotions or behaviors. *Examples:* Extraverted children who display rambunctious behavior may be disciplined more frequently than introverted children; highly anxious children may be shielded from even mildly stressful situations by parents and teachers, whereas less anxious children may be encouraged to deal with difficult situations.

Gene-by-environment interactions involve differential *sensitivity or susceptibility* to environments or experiences. That is, subsets of children respond to particular environments in different ways. *Examples:* Some children whose genetic backgrounds make them vulnerable to poor outcomes in the presence of maltreatment are the same children who display excellent outcomes in the presence of high-quality caregiving.

provides a framework for understanding many sources of genetic influence and allows researchers to estimate the **heritability** of many psychological characteristics. One of the most important shifts in thinking about genetics involves moving beyond early views on nature *versus* nurture to current complex descriptions of **gene-by-environment effects** and **gene-by-environment interactions** (see Table 2.2).

Finally, we need to consider cutting-edge research in **epigenetics**, the study of how environmental factors influence gene expressivity. Epigenetics is focused on the *activity* of the gene rather than the *presence* of the gene (see Figure 2:5 and Box 2:1). To illustrate this distinction, leading researcher Moshe Szyf (2013) analogizes the genome, deoxyribonucleic acid (DNA), as the script of a movie (or the score of a symphony), with epigenetics as the movie as it is actually filmed (or the performance of that symphony). Epigenetics, like synaptic pruning, is a way to think about how children's particular environments "*get under their skin*." If we see synaptic pruning as identifying a mechanism by which the brain "listens" to the environment, then we can also see that epigenetics identifies a mechanism by which genes "listen" to the environment. In both cases, developmental experiences, especially in early life and during adolescence, and the social context in which they occur, have the capability to become biologically embedded with lifelong impacts on developmental health. Slavich and Cole (2013, p. 331) provide an even more compelling description: "Contrary to the notion that our 'molecular selves' are fixed across time and situations, for example, is increasing evidence that changes in the expression of literally hundreds of genes can occur as a function of the physical and social environments we inhabit.... The human genome, therefore, is not a static blueprint for human potential. Instead our genome appears to encode a wide variety of 'potential biological selves,' and which 'biological self' gets realized depends on the social conditions we experience over the life course."

What we know about psychopathology is also influenced by these physiological models (Cicchetti & Walker, 2003). For some disorders, psychopathology unfolds according to a "maturational blueprint," with deviance innately and inevitably related to damage or dysfunction (Sameroff, 2000). Certain severe forms of intellectual developmental disorder are examples of this type of psychopathology (see Figure 2:6). For most disorders of childhood and adolescence, however, this straightforward model of physical cause and psychopathological effect can be set aside. Genetically informed models of psychopathology must account for the high heritability of many different kinds of disorder, as well as the findings related to genetic overlap. That is, rather than a correspondence between particular genetic variants and one disorder, there appear to be a more limited set of **risk alleles** that impair general processes (e.g., cognitive or emotion functions) across many disorders (Kiser, Rivero, & Lesch, 2015). Risk alleles include *common variants*, shared by

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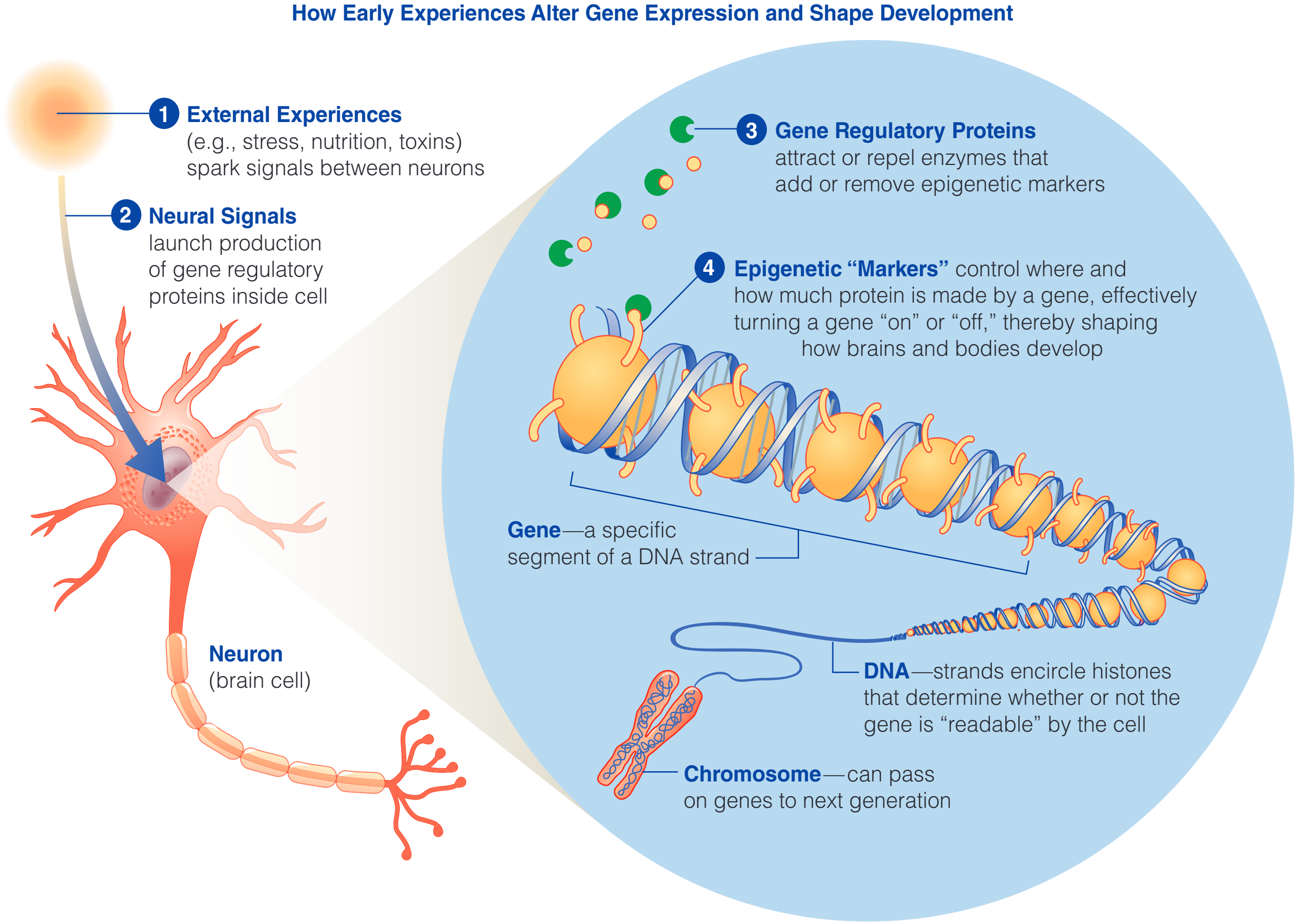
How Early Experiences Alter Gene Expression and Shape Development
1 External Experiences
(e.g., stress, nutrition, toxins)
spark signals between neurons
2 Neural Signals
launch production
of gene regulatory
proteins inside cell
3 Gene Regulatory Proteins
attract or repel enzymes that
add or remove epigenetic markers
4 Epigenetic "Markers" control where and
how much protein is made by a gene, effectively
turning a gene "on" or "off," thereby shaping
how brains and bodies develop
Gene—a specific
segment of a DNA strand
Neuron
(brain cell)
DNA—strands encircle histones
that determine whether or not the
gene is "readable" by the cell
Chromosome—can pass
on genes to next generation

FIGURE 2:5 Epigenetic research provides new insights about gene-environment processes and interactions.

Source: From the http://developingchild.harvard.edu/science/deep-dives/gene-environment-interaction/ (the Gene-Environment Interaction tab (under "Deep Dives"))

individuals with and without disorders; *rare variants*, both inherited and de novo (newly appearing); and many different combinations of variants. **Polygenic models** emphasize the likelihood that many genes have small effects and attempt to account for the multiple types of genetic variations and processes that result in genetic burdens that influence the development of both mild and severe forms of disorders (Kiser et al., 2015; Wray et al., 2014). Even with these exciting data, we need to be cautious about overstating our hypotheses and findings. The phrase "X is a gene for Y" is widely used, but it is inappropriate for psychology and psychiatry.

Physiological models suggest that there are inborn or acquired vulnerabilities to disorders—including genetic abnormalities, structural pathologies, and biochemical disturbances—that *may* lead to psychological distress and dysfunction. According to this physiological **diathesis–stress model**, structural damage or chemical imbalance does not *by itself* lead to disorder. Rather, diatheses (or predispositions) such as neurological damage at birth or genetic risk for disorder, in combination with additional stress (either physiological or environmental), lead to the emergence of a disorder. Diathesis–stress models call attention to the lack of a one-to-one correspondence between the genotype and phenotype for most forms of psychopathology, and they are an example of gene-by-environment effects or interactions.

Two variations of the diathesis–stress model are illustrated in the following cases. In the first case, a child with phenylketonuria (PKU) is born with a particular metabolic dysfunction, an inactive liver enzyme (a physiological diathesis of genetic origin). The presence of phenylalanine (a physiological stressor) in the child's diet and the subsequent metabolic abnormalities result in severe intellectual dysfunction. Treatment of this condition involves a diet low in phenylalanine, beginning shortly after birth; this intervention is associated

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BOX 2:1

EMERGING SCIENCE

Behavior Genetics, Epigenetics, and Developmental Psychopathology

Remarkable advances in scientific knowledge and technology have enabled investigators from many disciplines to ask, and begin to answer, questions about the biopsychosocial nature of human experience. **Behavior genetics** is “the study of the relationship between genetic variation and psychological traits,” including personality and psychopathology (Chabris, Lee, Cesarini, Benjamin, & Laibson, 2015). Variant forms of specific genes are known as *alleles* (or *polymorphisms*), and geneticists study whether these variations are associated with particular physical or psychological characteristics or with increased risk for disorders. Combining data from decades of twin, family, and adoption studies with new data from the Human Genome Project (a collaborative effort by the U.S. Department of Energy and the National Institutes of Health (NIH) that sequenced the approximately 20,000 genes in human DNA, genomics.energy.gov), researchers have agreed upon a number of “big” findings. These big findings include the following (Plomin, DeFries, Knopik, & Neiderhiser, 2016):

- All psychological traits show significant and substantial genetic influence.
- No traits are 100% heritable.
- Genetic impact is caused by many genes with small effects.
- Environments matter.

In addition to ongoing work in behavior genetics, complementary research on **epigenetics** holds enormous promise for helping to explain the ways in which the environment “gets under the skin” and facilitates or hinders genetic expression (see the NIH Roadmap Epigenome Project; www.roadmapepigenomics.org). Underlying these research efforts is the understanding that human genetic variability is essential, so that individuals are able to adapt to a wide range of environmental challenges and opportunities. Epigenetics “refers to processes and mechanisms . . . that affect the activity of the DNA but do not change the DNA itself” (Lester, Conradt, & Marsit, 2016, p. 29). DNA molecules contain genetic information stored as codes. “Gene expression is the process by which genes . . . make the specific proteins that determine the structure and function of the individual gene. Gene expression is initiated by transcription factors. . . . Epigenetic mechanisms regulate this transcriptional machinery, and in so doing control gene expression. Thus, *epigenetics controls the activity of the gene or how the gene functions*” (Lester et al., 2016, p. 30, emphasis added).

Indeed, epigenetics is the bridge between the fixed genome and the dynamic world in which the genome exists. Epigenetic processes maintain fundamental genetic stability on the one hand, while allowing for flexible genetic expression in the face of a changing environment on the other. Thinking about developmental psychopathology, then, what looks like maladaptation may actually be the best possible strategy in a challenging environment. For example, environmental stress is associated with early puberty. And although early puberty is associated with a range of long-term negative consequences, it is—at a biological level—an adaptive solution to difficult circumstances.

The most frequently studied epigenetic mechanism is *DNA methylation* (e.g., Szyf & Bick, 2013). “Levels of methylation are associated with how well DNA is transcribed. . . . As methylation levels increase, there is less transcription until the level of DNA methylation reaches the point at which the gene is switched off. . . . In the absence of DNA methylation, gene transcription is allowed to occur. Although DNA methylation is often described as an “on-off” switch, it is, in fact, more like a “dimmer” switch that gradually decreases gene expression as methylation increases. In other words, if all the cells associated with a particular gene are unmethylated, the population of cells can produce the amount of protein consistent with a fully active gene. Conversely, if the gene is fully methylated, it will produce very little or none of the protein. . . . The amount of methylation related to behavior varies by gene. Some behaviors may be affected by only slight changes in DNA methylation, while others may require a larger percent change” (Lester et al., 2016, pp. 30–31). With respect to methylation, what is especially important to understand is that it is the *expression* of the gene, rather than its presence that matters (O’Connor, 2014).

Epigenetics research may examine individual (or candidate) genes, small sets of genes, or much larger gene sets (researched using genome-wide assays). Much of the work in developmental psychopathology examines “how signals from the environment (prenatal or postnatal) trigger molecular changes” (Lester et al., 2016, p. 33), with a particular focus on early adversity and stress (Keating, 2016; Slavich & Cole, 2013; Szyf, 2013) and on disorders such as intellectual developmental disorder, autism spectrum disorder, and ADHD (O’Connor, 2014). Findings from these types of research studies are discussed in upcoming chapters.

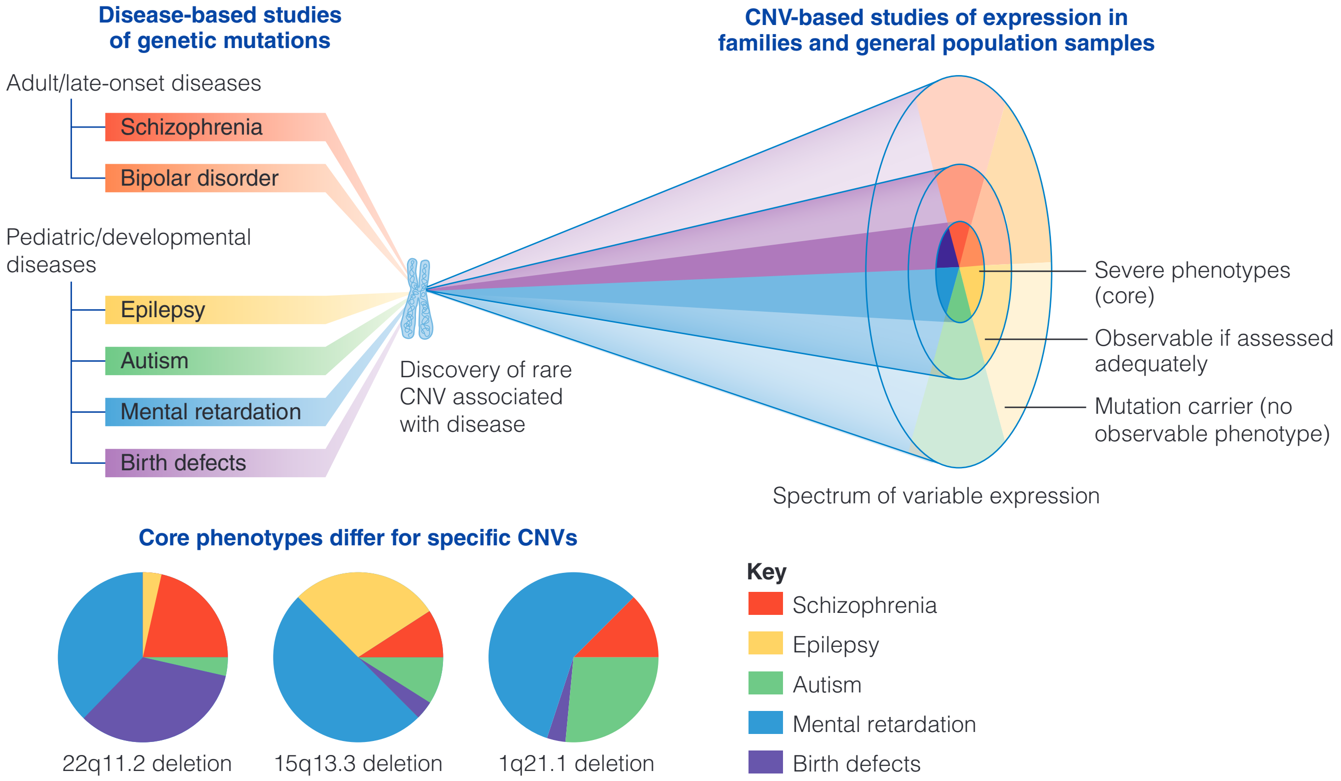
Disease-based studies of genetic mutations
Adult/late-onset diseases
Schizophrenia
Bipolar disorder
Pediatric/developmental diseases
Epilepsy
Autism
Mental retardation
Birth defects
Discovery of rare CNV associated with disease
CNV-based studies of expression in families and general population samples
Severe phenotypes (core)
Observable if assessed adequately
Mutation carrier (no observable phenotype)
Spectrum of variable expression
Core phenotypes differ for specific CNVs
22q11.2 deletion
15q13.3 deletion
1q21.1 deletion
Key
Schizophrenia
Epilepsy
Autism
Mental retardation
Birth defects

FIGURE 2:6 Neurodevelopmental phenotypes associated with copy number variations (CNVs).

Source: https://www.researchgate.net/figure/51783053_fig1_Figure-1-Neuropsychiatric-phenotypes-associated-with-copy-number-variations-CNVs

with more typical intellectual development. In the second case, a child's physical and psychological well-being may be adversely affected by maternal drug abuse during pregnancy (again, a physiological diathesis, but this one of nongenetic origin). After birth, poor parenting (a psychosocial stressor) of these health-compromised children may lead to a number of clinical disorders. High-quality parenting, in contrast, may buffer or protect the child from especially negative outcomes. Of course, we still must consider the possibility that brain structure or function is, in some clinically significant way, different in children and adolescents with disorders. As noted previously, it appears that many forms of psychopathology are associated with abnormal patterns of brain network organization. Models of developmental brain network disorders have been described for schizophrenia and for autism spectrum disorder (Collin & van den Heuvel, 2013; Vertes & Bullmore, 2015). With respect to neural plasticity, gene-by-environment processes, and brain–behavior relations in psychopathology, current physiological models of psychopathology seek to explain the interplay of physical and biological factors, neurological processes, development, and life experiences in order to understand the emergence, the course, and the treatment of psychopathology. Examples of these atypical processes will be provided in upcoming chapters.

Thinking about Max

From a physiological perspective, we emphasize the role of brain structure and function and consider the likelihood of atypical biochemical processes in the development of disorder in Max's case. Specifically, physiologically-oriented clinicians conceptualize Max's difficulties as primarily due to underarousal of key parts of his brain; because of this, he lacks sufficient focus and sustained engagement with the environment, resulting in inattentive and impulsive behavior. These difficulties, consistent with a diagnosis of attention-deficit hyperactivity disorder (ADHD), are not typical of other similar-age children.

Because the disorder is physiologically based, the first choice for intervention is a physiological treatment. The clinical literature suggests that stimulant drugs such as Ritalin are effective for children with ADHD, so a trial of stimulant medication would be prescribed. In addition, although pharmacological treatment is the primary intervention, behaviorally influenced strategies would be routinely included in both the school and home settings.

Thinking about Anna

Again, from a physiological perspective, we note with special interest Anna's family history, which includes her father's episodes of clinical depression, and consider the possibility of a genetic vulnerability to depression. Anna's various problems, then, might be usefully conceptualized as the psychological expression of a biochemical imbalance. For example, Anna's symptoms may be a result of low levels of the neurotransmitter serotonin, or dysregulation of multiple neurotransmitter systems.

Although treatment recommendations may include suggestions that Anna participate in structured social activities in school as a way of helping her to be more active and successful in friendships, the first step in her intervention is the initiation of a trial of antidepressant medication designed to correct the biochemical imbalance.

Psychodynamic Models

Historical and Current Conceptualizations

Psychodynamic models have a rich past and a recently revived future; they include the classic psychoanalytic explanations set forth by Sigmund Freud, the socially oriented explanations of Erik Erikson and Harry Stack Sullivan, the work of object-relations theorists such as Margaret Mahler and Donald Winnicott, and the contemporary perspectives provided by Robert Emde, Daniel Stern, and others. Psychodynamic models have historically focused on several themes, including (1) the impact of unconscious processes on typical and atypical personality development; (2) conflicts among processes and structures of the mind (e.g., id, ego, and superego); (3) the stages of development, with different ages associated with distinctive emotional, intellectual, and social challenges; and (4) the lasting impact of more (or less) successful resolutions of stage-related challenges on later outcomes. Indeed, these themes were well appreciated by the novelist and astute observer of human nature, William Faulkner, who wrote (in 1950's *Requiem for a Nun*), "The past is never dead. It's not even past."

Psychodynamic theorists and clinicians usually emphasized a fixation–regression model of psychopathology, which suggested that individuals who failed to work through developmental issues become "stuck" in the past. Disorders themselves were rooted in traumas or conflicts experienced during early childhood (e.g., the oral, anal, and phallic stages). Psychoanalytic interventions for children, such as those developed by Anna Freud and Melanie Klein, made special use of play (using toys and games) and art to bring repressed traumas and unconscious conflicts into therapeutic awareness.

Setting aside some of the more scientifically dubious claims of early psychodynamic models, we are left with much to appreciate. Contemporary psychodynamic approaches continue to emphasize (1) unconscious cognitive, affective, and motivational processes; (2) mental representations of self, other, and relationships; (3) the meaningfulness of individual (i.e., subjective) experiences; and (4) a developmental perspective focused on the origins of typical and atypical personality in early childhood and the constantly changing psychological challenges faced by children as they age (Emde, 1992; Fonagy & Target, 2008; Westen, 1998). These emphases are evident in some of today's most significant psychodynamically informed research, such as work on parent–child attachment and attachment's enduring effects on personality and interpersonal functioning (Cassidy, Jones, & Shaver, 2013).

Although recent psychodynamic models certainly take into account recent advances in neuroscience (Protopopescu & Gerber, 2013), there is still an emphasis on the importance of psychological contexts, such as relationships, when explaining the development of personality and psychopathology (Blatt & Luyten, 2009). With respect to treatments, today's psychodynamic assessments and treatments continue to rely on play to make connections with troubled children, to identify the specific pathology, and to effect change (Ray, Armstrong, Balkin, & Jayne, 2015). Psychodynamic psychotherapy for children and adolescents also emphasizes the important role of parents and family members (Palmer, Nascimento, & Fonagy, 2013).

Thinking about Max

From a psychodynamic perspective, we are concerned that the management of early developmental challenges may have compromised Max's current adjustment. For example, do his inattentive and distractible activity and lack of school success reflect unconscious conflicts about autonomy that he failed to resolve in a healthy manner during his preschool years? Or has a somewhat older Max encountered a more troubling set of issues related to competence and achievement? Should we consider the possibility of an underlying identification with his recently unemployed father? And are there connections between problems with family relationships and problems with peer relationships?

With these types of dynamic issues to explore, it will take some time to formulate a clear, clinical understanding of Max and a focused intervention plan. Treatment strategies may include exploring such dynamic issues through art, games, and imaginative play and formulating less specific, more open-ended treatment goals. A treatment plan is likely to include family sessions with Max's parents.

Thinking about Anna

From a classic psychodynamic perspective, we wonder about whether the physical and emotional changes associated with early adolescence have stirred up long-dormant conflicts about intimacy and sexuality in Anna. Within a more general attachment framework, she may be struggling with a basic sense of insecurity. Early and ongoing experiences with her father's inconsistent availability may contribute to her wariness in relationships and increasingly negative expectations about her ability to manage demanding school and social challenges. In addition, Anna's mother's insistence on close supervision of her friendships and restrictions on school activities may be making it difficult to express age-appropriate individuality or independence.

Given her age, Anna's assessment and treatment are more likely to include therapeutic conversations, with an emphasis on dynamic strategies of interpretation and clarification. Treatment goals will be focused on intellectual and emotional insight, based on the premise that insight will lead to improved functioning in Anna's everyday life.

Behavioral and Cognitive Models

Historical and Current Conceptualizations

In contrast to the inward orientation of the physiological and psychodynamic models, the **behavioral models** have an outward orientation, focusing on the individual's observable behavior within a specific environment. According to behavioral models, environmental variables have powerful effects on the development of personality and psychopathology, and these effects have been described by major theorists such as B. F. Skinner, Walter Mischel, and Albert Bandura.

Behavioral models are based on core concepts of learning theories and share a strong empirical foundation with them. These theories propose that both typical and atypical behaviors are gradually acquired via processes of learning, including **classical conditioning**, **operant conditioning**, and **observational learning**. The construct of **reinforcement** (i.e., the idea that positive and negative consequences lead to changes in behavior) is a critical component of all these learning processes.

According to Thomas, summarizing Skinner's behaviorism, "As a child grows up, two things develop: (a) the variety of behavior options (potential ways of acting) that the child acquires and (b) the child's preferences among those options. As children interact with their environments, they learn to prefer rewarding over nonrewarding actions" (Thomas, 2001, p. 14). Psychopathology, within the behavioral framework, is understood as the result of learning gone awry: the acquisition and reinforcement of maladaptive or undesirable behaviors, the lack of opportunity to learn adaptive or appropriate behaviors, unavailable or inadequate reinforcement of those adaptive or appropriate behaviors, or some combination of these. Over many decades, behavioral treatments have focused on unlearning, relearning, and new learning.

Newer cognitive-behavioral and cognitive approaches correspond to the cognitive revolution of the 1960s, 1970s, and 1980s. Regarding cognitive and behavioral interaction and integration, these approaches emphasize the ways in which children's thinking influences the many varieties of learning and the ways in which delays or deficits in cognition influence the emergence of disorders. With the more theoretically pure **cognitive models**, the focus is on the components and processes of the mind and mental development (Flavell 1982; Keil, 1999). Jean Piaget's and Lev Vygotsky's landmark studies on the stages and processes of cognitive development, as well as later information-processing and interactionist models, are exemplars of the cognitive perspective.

Contemporary revisions of Piagetian models focus on the dynamic interaction of tasks, contexts, and emotional states that influence cognition (Rose & Fischer, 2009), whereas probabilistic models focus on innovative interpretations of the how and why of children's thinking and learning (Gopnik & Tenenbaum, 2007). The **neoconstructivist approach** emphasizes evolutionary contexts, experience–expectant learning (an example of a brain–behavior relation), and both qualitative and quantitative change across development (Newcombe, 2011).

With respect to cognitive variables and psychopathology, "it is becoming increasingly clear that single cognitive deficit models of developmental disorders, like dyslexia, attention deficit/hyperactivity disorder (ADHD), language impairment, or autism, do not work" (Pennington, 2009, p. 76). Instead, an understanding of combinations of cognitive deficits is required. This more complex, and accurate, explanation of disorders depends on understanding the multiple influences of cognitive components, processes, and contexts across development. Effective, cognitive-based interventions involve increasing complexity as well.

Thinking about Max

Within the behavioral and cognitive-behavioral frameworks, Max's difficulties may be understood as a reflection of maladaptive learning, cognitive deficits, or both. For example, his inappropriate classroom behaviors may result in increased displays of adult concern and adult contact. Although negative in tone, these episodes may be positively reinforcing because of the adult attention and proximity that they generate. These interactions may be especially salient given his father's loss of employment and the change in his family's focus from children's activities to adult worries. Additional focus on Max's on-task behaviors, such as reading quietly in his seat and completing his math problems within the allotted time, and rewards for homework may be required. Both school performance and peer problems may also be influenced by Max's impulsive decision making. A cognitive-behavioral emphasis on more extensive analysis of situational cues and more deliberate examination of the likely consequences of particular actions may be a key part of Max's treatment plan.

Thinking about Anna

As with Max, Anna's problems can be viewed from a cognitive-behavioral perspective as a result of maladaptive learning and cognitive distortions. Her social difficulties are conceptualized as rooted in her misinterpretations of the intentions and actions of others. This misreading of benign social cues as signifying rejection has had a negative effect on Anna's self-esteem and on her belief in her ability to influence her environment positively. These cognitive errors, in turn, have led to avoidant behaviors. These avoidant behaviors, which—in the short term—minimize the distress that Anna feels, are then reinforced and lead to further isolation.

The intervention designed to ameliorate these behavioral and cognitive deficits includes identifying the cognitive errors that Anna is making and teaching her new ways to interpret and think about social situations. In addition, it is necessary to devise a schedule of positive reinforcements and rewards for increasing adaptive and healthy behaviors.

Humanistic Models

Historical and Current Conceptualizations

Humanistic models also have made valuable contributions to our understanding of development, psychopathology, and treatment. These models, including those of Carl Rogers and Abraham Maslow, emphasized personally meaningful experiences, innate motivations for healthy growth, and the child's purposeful creation of self. Within the humanistic framework, psychopathology is usually linked to interference with or suppression of the child's natural tendencies to develop an integrated (or whole) sense of self, with valued abilities and talents. Parents, teachers, social conventions, and children themselves can hinder healthy development. Intervention, then, involves the discovery or rediscovery of internal resources and provision of external support for self-organization, self-direction, and self-righting capacities.

At times criticized as overly optimistic about the potential for happiness, creativity, and actualization, the humanistic models are thematically related to more recent discussions of the self (Rosenfield, Lennon, & White, 2005), wellness (Keyes, 2006) and **positive psychology** (Luthar, Lyman, & Crossman, 2014; Weems, 2009), and renewed emphases on the experiential development of children (DeRobertis, 2006). We see increasing emphasis on "positive subjective experience, positive individual traits, and positive institutions" that seek to promote individual, family, social, and community well-being (Seligman & Csikszentmihalyi, 2000). The *broaden-and-build theory* of positive emotions explores the ways in which positive experiences lay the groundwork for the development of well-being and resilience across the lifespan (Conway, Tugade, Catalino, & Fredrickson, 2013). *Positive youth development* in adolescence, involving identifying opportunities for initiative and engagement, is one application of this model (Sanders, Munford, Thimasarn-Anwar, Liebenberg, & Ungar, 2015). Although the focus of this textbook is on psychopathology, thinking about happiness, hope, creativity, and growth (Seligman & Csikszentmihalyi, 2000) provides an essential perspective when considering children's distress and dysfunction.

Thinking about Max

Max has experienced an abrupt shift in educational atmosphere, from activity-centered learning to a teacher-organized approach, with much less time for highly enjoyed art and music. As the classroom expectations for academic achievement become more prominent, Max has struggled to find his place in the classroom setting. It is hard for him to relate what he is expected to learn with what he sees as his abilities and talents. From a humanistic perspective, Max's problems with peers may reflect his dissatisfaction with himself and his feelings of incompetence.

Humanistically oriented treatment will focus on increasing Max's chances for pleasure and mastery in school. In addition, therapeutic work may include numerous opportunities (talk-based, play-based, art-based, etc.) for the creation (and re-creation) of a valued sense of self. With a strong belief in the self-righting tendencies of children, we expect that Max will be able to use these resources and experience more rewarding personal, academic, and social outcomes.

Thinking about Anna

Anna, too, is facing a new school setting and increasing pressure from her mother, her peers, and society for her to identify special interests and specific goals for her future. Unlike Max, Anna does not think that she has any unique gifts that provide personal satisfaction or that make contributions to others. In fact, over time, Anna has come to see herself as unintelligent, unartistic, unathletic, and unattractive. These feelings have led to sadness, irritability, and withdrawal.

Within this framework, psychotherapeutic challenges that require Anna to take charge of planning, decision making, and her own happiness will be balanced by clear expressions of support and encouragement that she actually is capable, competent, and uniquely qualified for this responsibility. The expectation is that individual positive experiences will lead to an upward spiral of positive emotions and enhanced well-being.

Family Models

Historical and Current Conceptualizations

Leo Tolstoy proposed in *Anna Karenina* that "happy families are all alike, but every unhappy family is unhappy in its own way," and he showed much insight into the myriad ways that misery and dysfunction may be experienced and expressed by husbands and wives, parents and children, and brothers and sisters. However, Tolstoy's assertion about the uniformity of happy families is inaccurate, for there are also myriad ways in which joy and commitment may be experienced and expressed. Different families have different beliefs about the essential nature of children (Harold, 2000; Hwang, Lamb, & Sigel, 1996). Different families have different dreams for themselves and their children, as well as different fears, and these different beliefs, dreams, and fears have impacts on the functioning and adjustment of both happy and unhappy families.

In many individually focused models of disorder, we examine the "identified patient" and his or her unique collection of psychologically healthy and unhealthy characteristics (including physiological vulnerabilities, psychodynamic demons, and maladaptive learning). In contrast, **family models** propose that the best way to understand the personality and psychopathology of particular children is to understand the dynamics of their particular families. In fact, almost from the beginning of our concern with childhood disorders, there has been some recognition that many of these disorders may reflect, at least in part, family psychopathology. At times, we have correctly recognized the connections between, for example, child and parent anxieties. At other times, with heartbreaking consequences, we have erroneously linked specific child disorders such as autism with alleged parental shortcomings (e.g., Bettelheim, 1967).

Families have a special impact on typical and atypical development because they are the first setting for children's experiences; the influence of families, and parents in particular, is clear and powerful. Families are challenged to meet a variety of children's needs, including nurturing and socializing, promoting education, and providing financial support, and they can succeed or fail at any or all of these tasks (Emery & Kitzmann, 1995). A recent study of common caregiving practices (e.g., telling stories to infants, naming or counting, playing with infants, and taking infants outside) in 38 low- and middle-income countries highlighted the variety of experiences provided by parents, as well as the challenges to good caregiving in places with few basic health, safety, and economic resources (Bornstein, Putnick, Lansford, Deater-Deckard, & Bradley, 2015).

A number of family characteristics have received theoretical and empirical attention and require researchers and clinicians to alternate between two perspectives on family life: "looking from the inside out and from the outside in" (Fiese & Spagnola, 2007, p. 119).

These characteristics include family type (e.g., two-parent, single-parent, and blended families); family activities, rituals, and narratives; interparental warmth versus conflict; sibling warmth versus conflict; and family hierarchies and boundaries, whether family relationships and interactions are more or less cohesive, disengaged, enmeshed, or triangulated (Davies & Sturge-Apple, 2014). Changes in family relationships over time also have been the focus of research (Cowan & Cowan, 2003; Dunn, 2004). With a family model perspective, it is imperative to understand children's development and adjustment in the context of particular family relationships.

When we think about these kinds of family influences on development and psychopathology, we need to consider various intersections of individual and family processes. For example, we might explore how subsystems of the larger family system interact with one another to influence child outcomes (Cummings, 1999). The most frequently researched subsystem is the parent–child relationship. One example of parent–child interaction that has been studied for decades is parental control (Baumrind, 1971; Grolnick & Pomerantz, 2009). Grolnick and Pomerantz (2009) emphasize the need for careful description of this construct, contrasting control (e.g., pressure, intrusion, and domination) and structure (e.g., guidance). More recent research shifts from a primarily unidirectional approach (parent → child) to a more interactional emphasis (parent ← → child), with descriptions of several parenting profiles (e.g., authoritative, authoritarian, permissive, and rejecting/neglecting) and connections to adaptive and maladaptive outcomes (Davies & Sturge-Apple, 2014).

The family factors that have been discussed so far are examples of **shared environment**, the aspects of family life and function that are shared by all children in the family. Shared environmental variables are those variables that are often contrasted with genetic variables; that is, what is not explained by genes, or nature, is usually thought to be explained by shared environment, or nurture. Indeed, shared environments are an important contributor to mental health outcomes such as well-being or psychopathology (Burt, 2014). As we acknowledge the real impact of shared environments, we also need to consider the **nonshared environment**, the aspects of family life and function that are specific and distinct for each child. Nonshared environmental variables are those that contribute to sibling dissimilarity (McGuire & Shanahan, 2010; Suitor, Sechrist, Plikuhn, Pardo, & Pillemer, 2008). Siblings are distinctive, for instance, in terms of gender, age, and temperament and may elicit different types of parenting, affection, and material advantages (Jenkins & Bisceglia, 2011). Gender, for instance, is "a powerful predictor of developmental experiences and outcomes" (Liben, 2016). Sibling relationships themselves may be the source of nonshared experiences; how one of a pair of siblings views support, conflict, and respective value within the family may differentially influence adjustment (Brody, 2004). It is also important to consider how siblings respond to a brother or sister who is diagnosed with a disorder. Some siblings display unexpected resilience; others may have a much more difficult time (Kilmer, Cook, Taylor, Kane, & Clark, 2008).

With family models, assessment and treatment of psychopathology addresses the child in the family unit. Interventions include parents and often siblings. In addition to family- or system-specific treatments, family treatments may be psychodynamically, behaviorally, or cognitively oriented. Both individual and family-wide changes are considered when evaluating treatment outcomes.

Beyond Family Relationships: The Role of Peers

Just as relationships within nuclear families are associated with better and worse psychological outcomes, relationship networks outside families are also related to immediate and long-term consequences (Dishion & Piehler, 2007). For example, many children derive great pleasure from close relationships with extended family members, neighbors, and peers. In addition to pleasure, these relationships serve as rich settings for socioemotional learning (Hartup & Laursen, 1999). Peer relationships, and friendships in particular, provide opportunities for companionship, acceptance, and intimacy. An absence of friendships because of rejection, conflict, or withdrawal is associated with maladjustment (Choukas-Bradley & Prinstein, 2014). It is important to understand, however, that the benefits and costs of relationships are not always similarly experienced. For example, it appears that peer relationships differentially shape the emotional and behavioral development of boys and girls (Rose & Rudolph, 2006).

In addition, we need to consider normative versus atypical peer experiences, as well as the types of challenges that children encounter in larger peer groups and in particular dyads (Choukas-Bradley & Prinstein, 2014). We need to appreciate the many developmental advantages provided by friendships as well as the "dark side" of some friendships, with increases in maladaptive social behaviors (e.g., co-rumination in adolescent girl pairs, reinforcement of problem drinking behavior) (Choukas-Bradley & Prinstein, 2014). Finally, we must take into account the striking changes in the nature and frequency of peer interactions with respect to the near-constant connectivity enabled by social media.

Thinking about Max

Within the family framework, Max's difficulties are viewed as an expression of family distress and disorganization. In part, his school struggles and sibling conflicts may serve as a less threatening distraction for his parents than their marriage and financial concerns. Even if Max is the focus of treatment efforts, we cannot ignore the context in which his disorder developed and in which it is maintained.

Other family variables also may contribute to the maladjustment. It may be that the ideal classroom and school environments for Max are less hierarchical and more egalitarian than his close-knit, but highly autocratic, family environment. In addition, it may be useful to examine closely Max's parents' beliefs about children's growing-up years, their expectations about his academic success, and their dreams for his future. How do these beliefs support or interfere with his ongoing developmental challenges?

A family-oriented intervention for Max addresses these many variables and capitalizes on his affectionate family bonds. In addition to techniques designed to enhance his sense of self as a valued family member, Max and his parents are likely to be taught specific cognitive and behavioral strategies for his use in school and at home (e.g., keeping records of school assignments, having specific folders for completed homework, and posting schedules of chores on the refrigerator). Family sessions will be held, with goals to foster emotional and problem-solving communication skills, to strengthen the parents' alliance, and to diffuse sibling tension. Additional meetings with just the parents also may address some parenting and marital issues. With respect to peers, it will be important to identify in-school and after-school opportunities for Max to improve his friendships.

Thinking about Anna

Family-oriented theorists may closely examine Anna's mother's family values, beliefs, and practices. Perhaps Anna and her mother are close in unhealthy ways, with Anna's mother being overinvolved in her everyday decisions and Anna feeling overly responsible for her mother's welfare and happiness. Or perhaps Anna's mother signals ambivalence or discouragement in response to any signs of Anna's interest in dating, to the extent that it reminds her of her own romantic unhappiness. As Anna grows older and begins to explore dating, previous disappointments and current struggles may lead to an exacerbation of her symptoms.

Identifying the family variables that contribute to Anna's difficulties will lead to specific hypotheses about the kinds of therapeutic discussions that may be effective; these therapeutic opportunities will include joint mother–daughter sessions, as well as separate, individual sessions for both Anna and her mother. It is likely that scrutiny of Anna's friendships will reveal challenges that must be addressed as well.

Sociocultural Models

Historical and Current Conceptualizations

Many early revisions of classic psychoanalytic theory attempted to take into account relevant cultural factors. For instance, Karen Horney argued that Freud's concept of "penis envy" was mistaken. Rather than girls envying the physical fact of maleness, she suggested that they were envious of the social and cultural rewards associated with being a boy. Decades later, feminist theorists continued to make the case that the identification of disorders and particular interventions was very much influenced by gender-based norms and expectations about desirable personality outcomes.

Keeping this broad historical perspective in mind, we often focus on the ways in which social and cultural

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The quality of friendships in childhood is associated with a variety of developmental outcomes.

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factors uniquely disadvantage certain groups in society (e.g., girls, minorities, and families from lower socioeconomic status backgrounds) and increase vulnerability to disorders in these groups (Alegria, Vallas, & Pumariega; 2010; Chen, Fu, & Leng, 2014). One of the most frequently researched variables related to disadvantage and poor outcomes is poverty. Poverty's deleterious impact on the physical and mental health of children and adolescents is well documented (Atkins et al., 2015; Conger & Donnellan, 2007) and emphasizes the differing physical health, mental health, and academic outcomes that are associated with social disparities. Over time, **sociocultural models** of development and psychopathology have undergone a paradigm shift, in which cultural considerations have moved from the periphery of inquiry to the core (Rogoff, 2003; Spencer & Swanson, 2013). Researchers, theorists, and clinicians are now thinking about culture in a very different way. Culture is not only the background for development; rather, it is a major influence on development itself and must be examined in terms of both individual-level culture (e.g., cultural socialization of emotion) and social-level culture (e.g., community practices related to seeking mental health services) (Bornstein, 2002; Causadias, 2013). Understanding the ways in which culture influences adjustment and maladjustment requires the consideration of both cross-cultural variables (e.g., between resource-rich and resource-poor countries; or between Western and non-Western models of development and psychopathology) and within-culture variables (e.g., among children of different racial or ethnic backgrounds in a city or country; or between families of higher-socioeconomic-status and lower-socioeconomic-status environments).

Wicker (1992) has described the immediate environments, or "behavior settings," in which children grow and make sense of their lives. These kinds of behavior settings, components of **ecological models**, include homes, classrooms, and neighborhood playgrounds. These behavior settings are, in turn, influenced by broader variables, such as current societal values and norms, political conditions, socioeconomic status, technological changes, demographic conditions, and geographic conditions (Bronfenbrenner, 1986; Bronfenbrenner & Morris, 2006; Wicker, 1992; also see Figure 2:7). Glen Elder and his colleagues have emphasized an even broader perspective that attends to the influence of time and history on children's development. In Elder's model (Modell & Elder, 2002), there are four key assumptions:

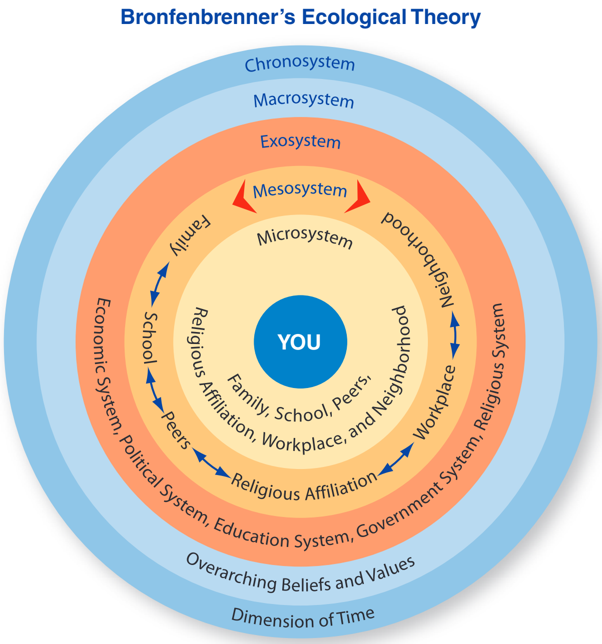
Bronfenbrenner's Ecological Theory
Chronosystem
Macrosystem
Exosystem
Mesosystem
Microsystem
YOU
Family
Neighborhood
School
Workplace
Peers
Religious Affiliation
Religious Affiliation, Workplace, and Neighborhood
Family, School, Peers,
Economic System, Political System, Education System, Government System, Religious System
Overarching Beliefs and Values
Dimension of Time

FIGURE 2:7 Illustration of Bronfenbrenner's ecological framework for human development.

Source: From Bronfenbrenner, U. (1986). Recent advances in research on the ecology of human development. In R. K. Silbereisen, K. Eyferth, & G. Rudinger (Eds.), Development as action in context: Problem behavior and normal youth development (pp.287-309). Springer.

1. Children develop within the social arrangements of a given moment.
2. These arrangements are changed by events and trends.
3. Developing individuals change history.
4. Cultures make sense of the ways of development.

The construct of birth cohort illustrates Elder's approach. A **birth cohort** includes individuals born in a particular historical period who share key experiences and events. Kids growing up during the Great Depression in the United States belong to a cohort group. Baby boomers are another cohort. So are Generation X, Generation Y, and millennials (see Figure 2:8).

Three examples of cross-cultural investigations illustrate the complex role of culture. In the first example, we need to think about how the understandings of children and their development are specific cultural contexts. We might focus, then, on one important difference between Western and non-Western approaches: the "early indulgence of the infant and an orientation toward group identity and spiritual goals" (Timimi, 2009, p. 15). In addition, a greater acceptance of a range of childhood behaviors is more often observed in non-Western cultures (Timimi, 2009);

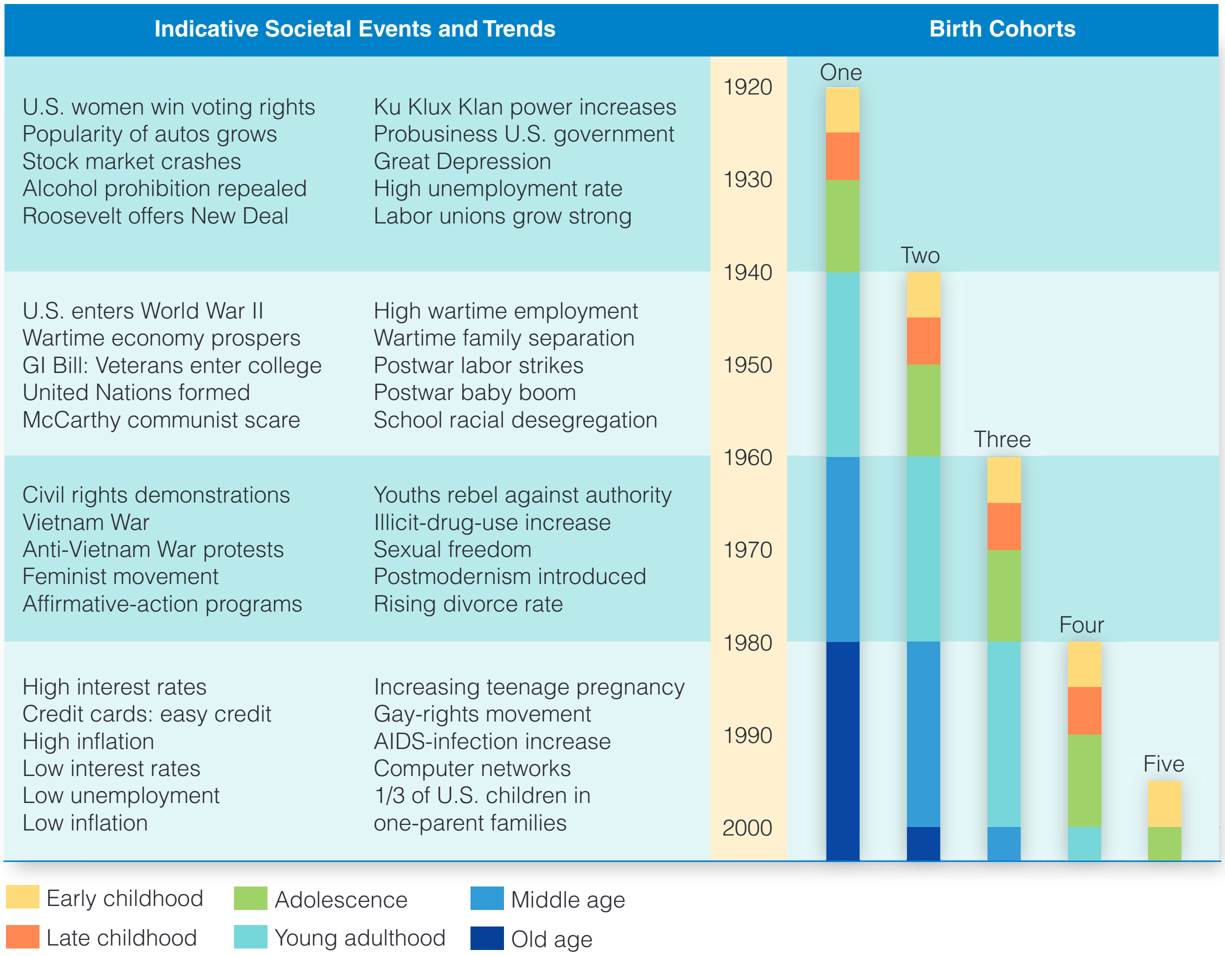

FIGURE 2:8 Relationship of societal conditions and birth cohorts.

Source: Thomas, R. M. (2000). Recent theories of human development. Thousand Oaks, CA: Sage, p. 99.

this greater acceptance of a variety of child behaviors may play a part in parent, family, and social conceptualizations of disorder. We also might explore the influence of diverse family contexts on sibling experiences, as well as the ways in which family factors such as warmth, support, and conflict have an impact on children's adjustments (McGuire & Shanahan, 2010).

In the second example, we explore both similarities and differences related to parental discipline (e.g., corporal punishment or shaming) in China, India, Italy, Kenya, the Philippines, and Thailand. Most discipline practices, across countries, were associated with similar outcomes (in terms of children's aggression and anxiety). Some differences, however, were observed, depending on perceptions of the typicality of specific practices (Gershoff et al., 2010).

In the last example, we consider the possibility that transactions among multiple components of culture (e.g., race, family makeup, socioeconomic status, and immigrant status) contribute to individual differences in adolescent well-being. For instance, although adolescents from Asian, Latin American, and European backgrounds report different levels of family obligation, parental authority, and autonomy, their levels of family conflict and family cohesion, as well as individual adjustment and academic achievement, are similar (Fuligni, 1998b; Fuligni, Tseng, & Lam, 1999; Fuligni, Witkow, & Garcia, 2005). A more mixed set of findings comes from data comparing the adjustments of children and adolescents from immigrant backgrounds. Fuligni (1997, 1998a) reported that children who moved to the United States from Asian and Latin American countries displayed "remarkable" adjustments, and suggested that strong family values related to cultural identification, family obligations, and education contributed to their success. In contrast, Mirsky (1997) and Birman, Trickett, and Buchanan (2005) observed increased psychological distress and dysfunction in samples of immigrants from the former Soviet Union to Israel and the United States. Various hypotheses have been suggested to explain the disparate findings, including the stressful qualities of migration, poverty, and segregation in new destinations, as well as acculturation and cultural stress (Slonim-Nevo, Sharaga, Mirsky, Petrovsky, & Borodenko, 2006; Suarez-Orozco, Todorova, & Qin, 2006).

Thinking about Max

Within a sociocultural framework, the assessment of Max will include identification of, for example, the impact of his family's socioeconomic status (previously solidly middle class, now less secure), the balance between assimilation and preservation of Honduran traditions, the embedding of the family in the Honduran/Latino community, and the possibility of faith-based resources. The details, significance, and likely outcome of Max's situation will be interpreted in light of a set of particular cultural values and expectations. A culturally informed intervention will take into account the concern and availability of Max's immediate and extended family and may provide culturally accessible conceptualizations of disorder and intervention.

Thinking about Anna

Contributions from a sociocultural perspective also will help us understand Anna's situation. There may be fewer financial resources for Anna and her mother, but their participation in church-related activities may provide additional support. Perhaps Anna will become more interested in developing connections to her religious community, or she will become more aware of her personal concerns related to gender or politics. In all instances, we expect this perspective to lead to a fuller, more nuanced approach to disorder and intervention.

Over the course of this chapter, it has become abundantly clear that a single model of development, psychopathology, and treatment, no matter how comprehensive, cannot provide all the necessary information. Depending on the particular child, different aspects of various models, taken together, contribute to better understanding and a greater number of specific options for support and intervention. This emphasis on complexity and integration will naturally lead us, in the next chapter, to the consideration of contemporary principles and practices of developmental psychopathology.

Key Terms

Dimensional models of psychopathology (p. 13)
Categorical models of psychopathology (p. 13)
Physiological models (p. 14)
Connectome (p. 14)
Neural plasticity (p. 16)
Genotype (p. 17)
Phenotype (p. 17)
Behavior genetics (p. 17)
Molecular genetics (p. 17)
Genome-wide association studies (p. 17)
Behavior genetics (p. 17)
Heritability (p. 18)
Gene-by-environment effects (p. 18)
Gene-by-environment interactions (p. 18)
Epigenetics (p. 18)
Risk alleles (p. 18)
Polygenic models (p. 19)
Diathesis–stress model (p. 19)
Psychodynamic models (p. 22)
Behavioral models (p. 23)
Classical conditioning (p. 23)
Operant conditioning (p. 23)
Observational learning (p. 23)
Reinforcement (p. 23)
Cognitive models (p. 23)
Neoconstructivist approach (p. 23)
Humanistic models (p. 24)
Positive psychology (p. 24)
Family models (p. 25)
Shared environment (p. 26)
Nonshared environment (p. 26)
Sociocultural models (p. 28)
Ecological models (p. 28)
Birth cohort (p. 28)

Chapter Summary

- Theoretical models of development, psychopathology, and treatment help organize clinical observations, direct research efforts, and design treatment programs.
- Dimensional models of psychopathology emphasize the gradual transition from the typical range of feelings, thoughts, and behaviors to clinically significant problems.
- Categorical models of psychopathology emphasize differences between distinct patterns of emotion, cognition, and behavior that are within the typical range and those that define clinical disorders.
- Physiological models emphasize the roles of genetics, biological factors (such as brain structure and function), and chemical processes. Increasingly complex models that highlight the combined effects of genes and environments are the focus of much contemporary research, including studies of behavior genetics and epigenetics.
- Psychological models, such as the psychodynamic, cognitive-behavioral, humanistic, and family models, emphasize intrapersonal and interpersonal factors in the development, course, and treatment of psychopathology.
- Sociocultural models emphasize the importance of the social context, including gender, race, ethnicity, and socioeconomic status, in the development, course, and treatment of psychopathology.

3

Principles and Practices of Developmental Psychopathology

CHAPTER OUTLINE

The Framework of Developmental Psychopathology

Developmental Pathways, Stability, and Change

Competence and Incompetence

The Case of Carlos

The Case of Jasmine

Risk and Resilience

Risk and Risk Factors

Resilience and Protective Factors

BOX 3:1 RISK AND RESILIENCE: "Ordinary Magic"

Research Strategies in Developmental Psychopathology

BOX 3:2 RISK AND RESILIENCE: The Great Smoky Mountains Study

AS WE EXAMINE THE PRINCIPLES and practices of developmental psychopathology, keep in mind the definitions provided in Chapter 1's introduction: **Psychopathology** refers to intense, frequent, and/or persistent maladaptive patterns of emotion, cognition, and behavior; and **developmental psychopathology** extends this description to emphasize that these maladaptive patterns occur in the context of typical development and result in the current and potential impairment of infants, children, and adolescents. Here, we will use these definitions as our cornerstones and build on them to explore related concepts of distress and dysfunction.

This chapter has three sections. The first section is primarily focused on development, with descriptions of developmental pathways and child competence and incompetence. The second section reviews the key constructs of risk and resilience; examples from a variety of empirical and clinical studies make explicit the connections between theoretical constructs and real-life children. The third section provides an overview of research strategies in developmental psychopathology.

The Framework of Developmental Psychopathology

Developmental psychopathology is a research-based, conceptual approach that provides a framework for understanding how specific disorders develop, what happens over time to children who develop disorders, and what we can do to help these children. From a theoretical perspective, as emphasized in Chapter 2, developmental psychopathology is not associated with a single point of view (see Figure 3:1). From a clinical perspective, developmental psychopathologists assume that a variety of assessment, prevention, and intervention techniques will

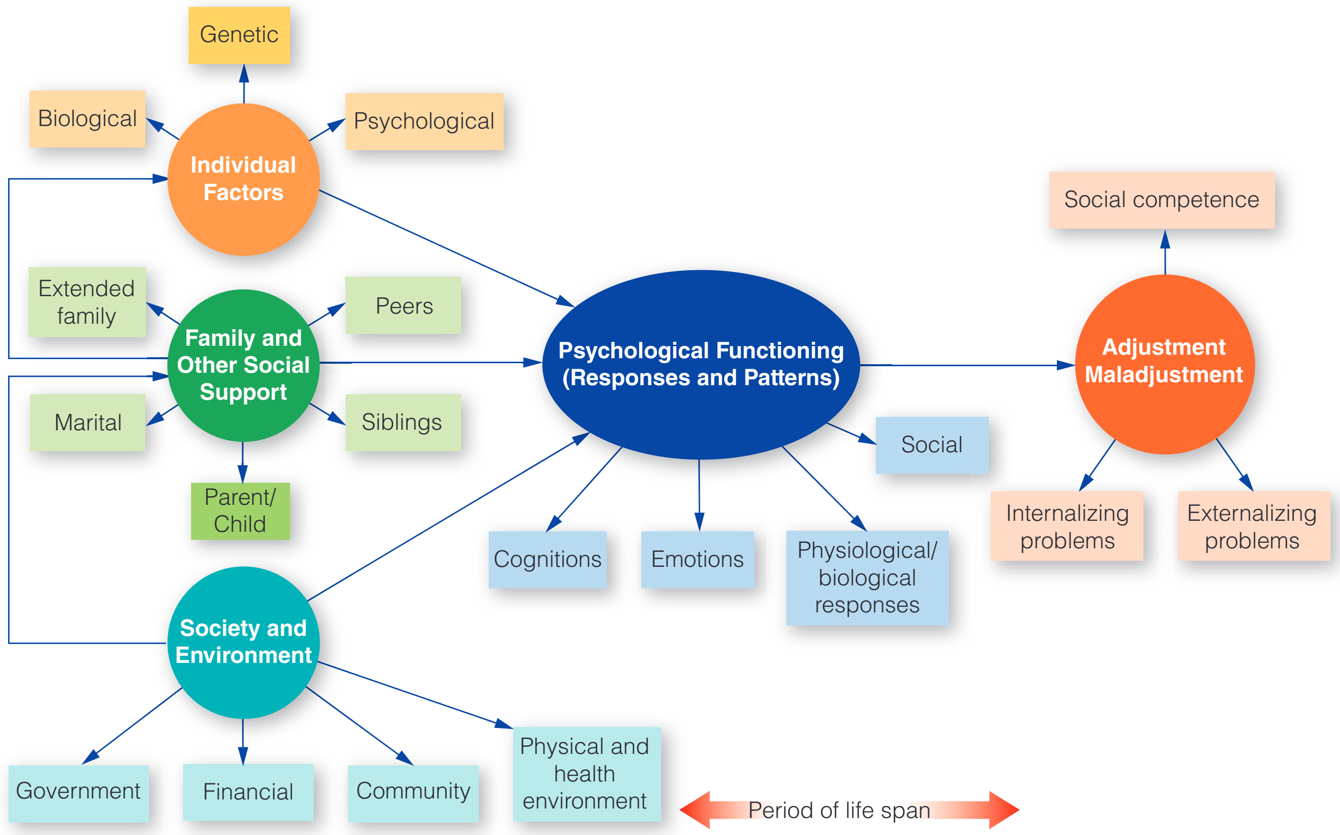

FIGURE 3:1 A framework for developmental psychopathology.

Source: Cummings, E. M. (1999). Some considerations on integrating psychology and health from a life-span perspective. In T. L. Whitman, T. V. Merluzzi & R. D. White (Eds.) (pp. 277–294), *Life-span approaches on health and wellness*. Mahwah, NJ: Lawrence Erlbaum.

prove useful. The contributions of other disciplines are explicitly acknowledged. Numerous researchers and clinicians in psychiatry, social work, education, and public policy provide important hypotheses, data and interpretive insight, and mental health care. Many individuals have contributed to the growth of the field; their seminal reviews have focused the organization and content of this chapter (Achenbach, 1982, 1990; Cicchetti, 1984, 1990a, 1990b; Garmezy & Rutter, 1983; Rutter, 2013; Sameroff, 2000; Sroufe, 1997, 2009, 2013).

Within the developmental psychopathology framework, disorders are frequently understood as a developmental distortion or a form of unsuccessful adaptation. More specifically, Mash and Dozois (1996, p. 5) characterize psychopathology in children as an adaptational failure that "may involve deviation from age-appropriate norms, exaggeration or diminishment of normal developmental expressions, interference in normal developmental progress, failure to master age-salient developmental tasks, and/or failure to develop a specific function or regulatory mechanism." These types of adaptational failures have often been viewed as either *delay* (e.g., the child acquires language more slowly than other children), *fixation* (e.g., the child continues to suck her thumb long after other children have stopped), or *deviance* (e.g., the child behaves strangely, unlike other children) (Fischer et al., 1997). Understanding children's disorders as delay, fixation, or deviance highlights the difficulties of *a particular child at a particular point in time,* providing us with one way of thinking about the connection between typical and atypical development.

Another way of thinking about the connection between typical and atypical development is to examine the notion of *process*. Sroufe and Rutter (1984) suggest that adaptation (or maladaptation) is an ongoing activity. With this in mind, we can think about disorders as series of problems over time, with small problems leading to larger problems, or different problems, and so on. Children's psychopathology, then, does not emerge all of a sudden or out of the blue; rather, it unfolds over time. To make these descriptions somewhat less abstract, we can think metaphorically of developmental psychopathologists making difficult choices between taking photographs or videos of troubled children. Single photographs can be compelling in their detail but are time bound. Videos provide a more dynamic perspective, but wide-angle views may miss some detail. We have to be creative in our use of both the camera lens and film as we try to capture the essence of children's psychopathology.

Developmental Pathways, Stability, and Change

The concept of **developmental pathways** (or trajectories) illustrates the principle that adjustment and maladjustment are points or places along a lifelong map. There are diverse positive developmental pathways: many different ways for children to grow up safe, happy, and capable. Less happy, less adept children also follow multiple developmental pathways, but these are distinct, different roads. With a developmental pathways perspective, we need to account for the ways in which adaptation (or maladaptation) at an earlier point in time connects to adaptation (or maladaptation) at a later point in time. Sroufe (2013, p. 1216) emphasizes two key points. First, *development is cumulative*; that is, it "builds upon itself." Second, *developmental pathways are probabilistic*, *not deterministic*. In other words, early difficulties do not directly and always lead to disorder.

Developmental pathways can be characterized as broad or narrow (Holden, 2010). Broad pathways include larger-scale, goal-directed patterns of feelings, thoughts, and behaviors across multiple domains (e.g., achieving social competence, academic success, or overall well-being). Narrow pathways involve more specific goals (e.g., mastering a musical instrument, learning a second language, or maintaining a long-distance friendship). Recent theoretical and empirical work has led to innovative perspectives on developmental pathways, including recognition of the roles of parents in children's pathways.

Developmental pathways, or developmental trajectories, are usually discussed in terms of individual children or groups of children. But parents have significant impacts on pathways. Holden (2010) describes several ways in which parents influence children's pathways. One way involves *initiating trajectories* by selecting environments and activities. "For example, musical parents immerse their offspring in music and bring them to concerts; political parents expose their children to news reports and discuss politics during meals" (Holden, 2010, p. 199). Another way involves *supporting trajectories* by providing attention and encouragement to children. Children who display an interest in animal welfare, for instance, need to be driven to the local humane society to volunteer. And another way involves *mediating trajectories*, helping "children interpret roadblocks, avoid off-ramps, and steer clear of negative trajectories" (p. 199). When unexpected challenges or stressful circumstances (such as chronic illness, exposure to violence, or divorce) occur, parents might actively prepare their children for upcoming events, talk through difficult events as they happen, or help children understand sad experiences after they occur. These parental roles, of course, are understood in the context of children's active roles. Holden describes children as *reacting* to parent-initiated pathways, as *controlling* their own degree of engagement and effort on a particular pathway, and as *initiating* their own pathways.

Equifinality and **multifinality** refer to similarities and differences in individual pathways to a disordered outcome (Sroufe, 2013; also see Figure 3:2). *Equifinality is best understood as sets of differing circumstances that lead to the same diagnosis*. For example, one child may fall behind in school and experience repeated academic failures. Another may be part of a family that is disengaged and hostile. Still another may have a genetic vulnerability to mood disorder. Equifinality describes the process whereby all three of these children go on to

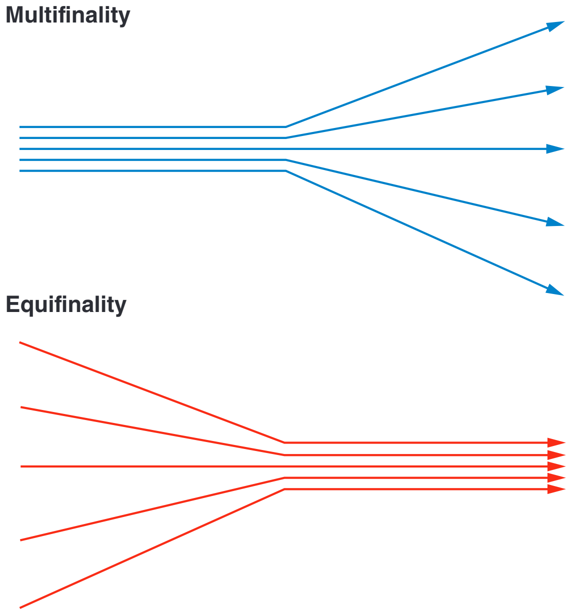

FIGURE 3:2 Illustrations of *equifinality* and *multifinality*.

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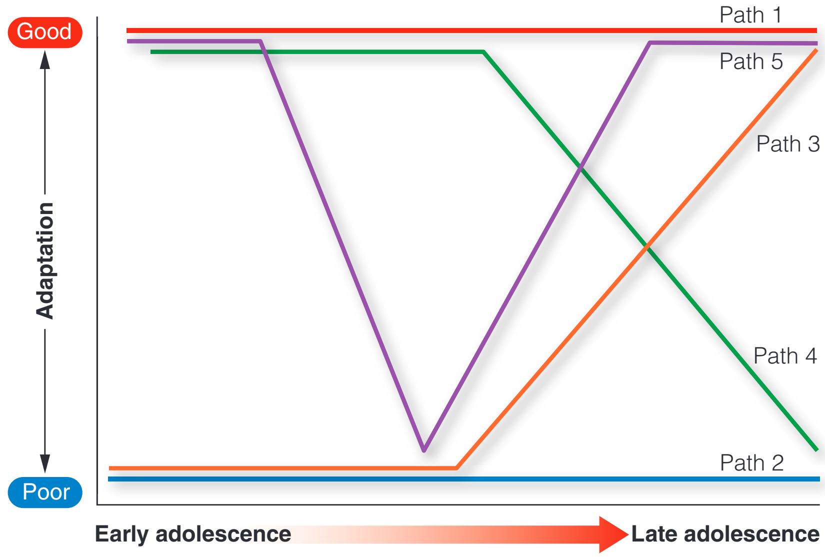

Path 1	Stable Adaptation	Few behavior problems: Good self-worth. Low risk exposure.
Path 2	Stable Maladaptation	Chronic adversities; little protection. *Example*: Aggressive, antisocial behavior maintained.
Path 3	Reversal of Maladaptation	Important life change creates new opportunity. *Example*: Military carrer affords opportunity.
Path 4	Decline Adaptation	Environmental or biological shifts bring adversity. *Example*: Family divorce contributes to maladaptation.
Path 5	Temporal Maladaptation	Can reflect transient experiment risk taking. *Example*: Use of illegal drugs.

FIGURE 3:3 Zigzag and indirect pathways.

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develop major depression in adolescence. With equifinality, different beginnings result in similar outcomes.

Multifinality is best understood as sets of similar beginnings that lead to different outcomes. Here, three children all begin with the same set of circumstances, perhaps involving maternal psychopathology and severe economic disadvantage. One child may struggle and manage to just get by; another may surpass all expectations; and the last may fail in school, in relationships, and in the job market. With multifinality, similar beginnings result in different outcomes. For both equifinality and multifinality, we are concerned with the kinds of individual, familial, and social variables that influence children's developmental pathways both toward and away from disorder.

So far, our discussion of developmental pathways has emphasized stability, the ways in which maladaptation continues over time and place. We can look at Figure 3:2 and see the straight lines or direct paths of development and the apparent inevitability of certain outcomes. But developmental pathways also encompass change and transformation. Figure 3:3 provides additional examples of zigzag, curving, or indirect developmental paths.

Two of the most important things to remember when thinking about developmental pathways are that (1) change is possible at many points; and (2) change is constrained or enabled by previous adaptations (Sroufe, 2013). For example, the transition to middle school is often associated with a larger group of peers from which a child may choose new friends. Whether a child is able to develop new friendships depends on his or her self-image, social skills, and earlier successful (or unsuccessful) experiences in elementary school. With a collection of unique factors for any given child—the timing of diagnosis, the specific disorder, the kind of intervention, and specific familial and environmental variables—we expect differences in the types of change or rates of change.

Rutter (1996) has explored the "transitions and turning points" of developmental pathways, examining the kinds of variables that are associated with change.

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He identifies both internal, intrinsic factors (such as the acquisition of language or the onset of puberty) and external factors (such as a move to a new home or a divorce). Rutter ties these transitions to the shutting down or opening up of opportunities. For example, the decision by an academically struggling adolescent to drop out of school may result in the shutting down of a number of employment options or the closing off of certain aspects of a positive self-image. Or, following a move to a new neighborhood, a child with a difficult reputation among peers may be able to develop new and more successful friendships. These transitions and turning points are similar to the description in Holden (2010) of detours, roadblocks, and off-ramps. *Detours* are events or junctures that redirect pathways (e.g., a new school, a change in family structure). *Roadblocks* are events or responses that shut down or slow down positive trajectories (e.g., restricted access to high-quality education, adolescent pregnancy). And *off-ramps* are places where children exit a positive trajectory (although children can reenter at a later point in time).

Throughout the textbook, in discussions of the developmental course of disorders, mechanisms which are hypothesized to underlie **continuity** (i.e., stability) or **discontinuity** (i.e., change) will be described. It is important to understand that genes, environments, and development itself all contribute to adaptive and maladaptive pathways. Whether we describe adaptive or maladaptive pathways, or stable or changing patterns, it is important to understand that "the course of development is lawful" (Sroufe & Rutter, 1984). Lawful, or coherent, development is different from stability. Sroufe and Rutter argue that we need to look for connections that make developmental sense. For example, a child's approach to calming herself may look different when she is eight years old (e.g., talking quietly to herself, breathing deeply) than it did when she was four years old (e.g., curling up with a favorite blanket), but her later efforts are meaningfully related to her earlier efforts. As another example, some children who are bullied by older siblings at home go on to bully children in younger grades in elementary school. Being maltreated and maltreating others are *not* identical forms of behavior, but they are sometimes connected in terms of ideas about the self, relationships, and power. This notion of developmental **coherence** is the final component of our understanding of all types of developmental pathways. Coherence reflects our belief that beginnings may be logically linked to outcomes if we carefully evaluate the variables that lead to stability as well as the variables that lead to change.

Competence and Incompetence

Up to this point, we have assumed that children either do well or do poorly. We have assumed that psychological well-being is characteristic of some children, but not others. In reality, of course, well-being is not an all-or-nothing phenomenon. Most typically developing children do better, or are more competent, in some areas than in others. **Competence**, within the framework of developmental psychopathology, reflects effective functioning in important environments (Burt, Coatsworth, & Masten, 2016). Children who are competent display a "track record of effectiveness in age-salient developmental tasks," and this effectiveness is "embedded in developmental, cultural, and historical context" (Burt et al., 2016, p. 436; see also Table 1:1 in Chapter 1). Competence involves multiple components, including a child's skills and talents, beliefs about his or her effectiveness, personality characteristics, and accomplishments. The study of competence overlaps the study of positive development in youth and takes into account the sociocultural expectations, valued outcomes, and environmental contexts that influence children's adjustment or maladjustment (Mahoney & Bergman, 2002).

The Case of Carlos

Carlos is in seventh grade. Although his childhood to date has been relatively happy and uneventful, tensions in the home have increased in the year since his father was laid off from his job. Initially supportive of her husband, Carlos's mother has begun to resent the fact that Carlos's father has rejected several job opportunities that he felt were less than what he deserved. Money has become tight, and the family has had to restrict purchases such as new school clothes and supplies.

Carlos, a rather shy individual, is self-conscious and generally uncomfortable around his classmates. He had difficulty making the transition to middle school in sixth grade, and he felt overwhelmed by the large and bustling setting. He is a talented student with an especially strong aptitude in math and science. In fact, his science teacher, Mr. Gordon, invited him to join the middle school math team. Carlos has made a significant contribution there and was asked by several other team members to join them in developing and entering a project for a science competition. Within these more structured social settings, Carlos has begun to relax and develop some genuine friendships. Mr. Gordon has continued to mentor him, and he has told Carlos's parents that Carlos is his hardest-working student. In fact, he is recommending that Carlos

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switch to the school's accelerated academic track for the following semester. Even with these school achievements, the boy has become increasingly withdrawn and irritable at home, where the arguments between his parents have become more frequent. ■

The Case of Jasmine

Jasmine is in the seventh grade. When she was eight years old, her parents divorced after several turbulent years, during which each developed serious chemical dependency problems. Jasmine was sent to live with her grandmother for a year. During that time, she struggled with a number of anxiety symptoms and sleep disturbances and experienced many problems at school. Her grandmother, however, was patient and supportive of both her granddaughter and her daughter while Jasmine's mother completed a successful course of treatment, found work, and located an apartment close by. After rejoining her mother, Jasmine gradually came to trust the stability of her new home and continued to be very involved with her grandmother.

After several failed attempts to overcome his addictions, Jasmine's father recently found a treatment program that has helped him make real progress. Although his contact with Jasmine has been limited, he has slowly reentered her life, with the approval and encouragement of Jasmine's mother. In particular, he has taken a strong interest in Jasmine's soccer and basketball teams, attending as many games as possible. Like her father, Jasmine is an outstanding athlete. She has great natural ability, works hard at practice, and loves to compete. All her close friendships have developed from time spent with teammates. She often says that she is far happier on the soccer field and basketball court than in the classroom.

In fact, school is an increasing challenge for Jasmine. Although her pleasant personality and diligence served her well in elementary school, these qualities have not been enough to make up for her poor reading skills and difficulty comprehending the more abstract and complex content of her middle school courses. She is always behind in her assignments, and her resistance to spending time on her homework is the one major area of conflict between Jasmine and her mother. ■

Thinking about Carlos and Jasmine, it becomes clear that children's developmental pathways cannot be described as altogether good or altogether bad, and children's developmental outcomes are not altogether competent or altogether incompetent. Carlos displays academic strengths but struggles to feel comfortable with his family. Jasmine is well liked by peers and is a gifted athlete but functions poorly in the school setting. As an adult, Carlos may eventually derive great satisfaction from a career as an engineer, but he may always feel some discomfort with intimate relationships. Jasmine may enjoy her job as a physical therapy aide, but feel more accomplished when she thinks about her close-knit family and her several awards for volunteer work in her community. Like Carlos and Jasmine, all children display various *domains of competence*, which involve particular skills and achievements, combined with domains (or areas or types) of incompetence, which involve lack of skill or lack of achievement. Other researchers have referred to similar constructs as *arenas of comfort*, or spaces of relative calm (Simmons & Blyth, 1987): "An arena of comfort provides a context for the individual to relax and rejuvenate so that potentially stressful changes and experiences in another area can be endured or mastered" (Call & Mortimer, 2001, p. 2). Combinations of competencies and incompetencies are as true of children with disorders as they are of children without disorders. As we present specific psychopathologies in the following chapters, it will be essential to remember that children's disorders coexist with their talents and successes. We will emphasize the need to take into account children's strengths during assessment and diagnosis, as well as the need to draw on those strengths in designing effective treatment plans.

Several models of competencies have been described. An early and still influential model identified three domains of competence in younger school-aged children: academic achievement, behavioral competence, and social competence. Two additional domains appear in adolescence: romantic competence and job competence (Burt et al., 2016; Masten & Coatsworth, 1998). Generally, children who are competent in one area are somewhat more likely to be competent in other areas. Still, competence in one area by no means assures competence in another. We can all recall a child in elementary school who was academically gifted but socially awkward, or a child who enjoyed a wide circle of friends but struggled with schoolwork. By adolescence, there is less overlap of domains of competence than there was in childhood, with social competence no longer related to academic achievement or behavioral competence. For instance, many adolescents make increasingly specific decisions about high school coursework (e.g., enrolling in science or language courses that are college prerequisites) and extracurricular activities (e.g., vacations with family or employment opportunities) that lead to increases or decreases in domain-specific skills. Competence in any domain does not emerge full blown, and there are many factors that contribute to the development and maintenance of competence in children.

Other models of competence are less focused on the domains in which children display effective behavior and more focused on characteristics that contribute to competence in a variety of circumstances. The *core competencies* model is focused on five markers of healthy development (Guerra & Bradshaw, 2008): (1) a positive sense of self, (2) self-control, (3) decision-making skills, (4) a moral system of belief, and (5) social connections. The positive youth development model known as *Five Cs* includes five dimensions of healthy adjustment: Caring, Character, Competence, Confidence, and Connections (Lerner et al., 2005). Although there are some differences in these models, all of them emphasize distinctive developmental patterns of effective and ineffective functioning (Burt et al., 2016).

Risk and Resilience

We turn now to discussions of some of the multiple factors that enhance or complicate children's development and functioning, focusing first on risk and resilience (Garmezy & Rutter, 1983; Rutter, 2013). The constructs of risk and resilience have been investigated for several decades, with much of the early work focused on the developmental outcomes of children of parents with schizophrenia (Garmezy, 1974; Mednick & Schulsinger, 1968). Key observations regarding this group of children were that (1) significantly more of them developed psychopathologies compared to children whose parents were not diagnosed with schizophrenia, and (2) many of these children, despite their difficult family circumstances, had adequate and even excellent outcomes. Why some children struggle and why others prevail are the questions at the heart of risk and resilience research.

Risk is defined as *increased vulnerability to disorder*. **Risk factors** are the individual, family, and social characteristics that are associated with this increased vulnerability. **Resilience** is defined as *adaptation (or competence) despite adversity*. **Protective factors** are the individual, family, and social characteristics that are associated with this positive adaptation.

Risk and Risk Factors

Risk factors increase vulnerability in two ways: (1) *nonspecific risk*, which involves increased vulnerability to any, or many, kinds of disorders; and (2) *specific risk*, which involves increased vulnerability to one particular disorder. As an example of specific risk, the inactive liver enzyme that interferes with the metabolism of phenylalanine is associated with a particular type of intellectual developmental disorder. As an example of nonspecific risk, poverty is associated with a variety of negative outcomes. And just to make things interesting, there are factors that are both somewhat specific and somewhat nonspecific. For example, children whose parents are diagnosed with schizophrenia display increased vulnerability to schizophrenia itself, as well as increased vulnerability to a number of other psychological disorders. Finally, although it may seem as if a child either has a risk factor (e.g., poverty) or does not, risks are not usually all-or-nothing events (e.g., there are degrees of poverty). We need to think about most risk factors as both dimensional and complex.

Types of Risk Factors

The most common distinctions made among types of risk factors involve individual, family, and social examples. *Individual risk factors* are child focused and include things like genetics and physiological processes, gender, and temperament and personality. As we will see in upcoming chapters, being a boy or a girl makes one more or less vulnerable to certain psychopathologies. Gender is also related to the timing of disorders. Disorders that are more frequent in boys tend to be early-appearing (with neurodevelopmental impairments), whereas disorders that are more frequent in girls tend to be diagnosed in adolescence (Thapar & Rutter, 2015). Being very intense, easily aroused, or difficult to soothe also makes a child more vulnerable to disorder. Keep in mind, however, that a risk factor for one disorder may be a protective factor for another. For instance, a child who is fearful is less likely to develop a conduct disorder but more likely to develop an anxiety disorder.

Family risk factors are those associated with the child's immediate caretaking environment and include parent characteristics such as the presence of psychopathology or harsh, punitive styles of parenting, as well as family characteristics such as chronic conflict between parents, lack of supervision, or unusual discord among siblings (Davies & Sturge-Apple, 2014). Maternal psychopathology is often cited as a nonspecific risk factor.

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Poverty, lack of access to playgrounds and good schools, and dangerous neighborhoods are all social risk factors that may compromise children's development.

That is, having a mother with a serious psychological disorder is frequently related to children developing disorders; these disorders are sometimes similar to the mother's, but they are also often different. Depressed moms can have depressed kids, but depressed moms can also have anxious kids and kids with conduct problems.

Social risk factors include those associated with the child's larger environment, including peers and schools, neighborhood and socioeconomic niche, and racial, ethnic, and cultural characteristics. With respect to peers and schools, for example, we pay attention to academic quality and support, school-based activities, and peer relationships such as bullying, rejection, or negative influence (Choukas-Bradley & Prinstein, 2014). With respect to socioeconomic factors, we are especially concerned with the ways in which poverty compromises children's well-being. Poverty is a complex experience, and risk is measured in terms of degree, chronicity, and timing. In addition, there are data that suggest that children in upper-middle-class environments are also at increased risk for disorders such as drug and alcohol abuse (Luthar, Barkin, & Crossman, 2013).

Certain kinds of family and social risk factors are conceptualized as stressful or adverse life events (e.g., divorce or parental unemployment). Stressful life events also include experiencing natural disasters such as floods or tornadoes. Far too many children in the world live in war zones, with risks related to displacement, exposure to violence, and parental absence or loss (Werner, 2012).

Numbers of Risk Factors

Many researchers have observed that the total number of risk factors that children experience is even more important than the particular type of risk factors (Evans, Li, & Whipple, 2013; also see Figure 3:4). We know that children who are exposed to multiple risks have worse outcomes than children exposed to single risks. Research on cumulative risk emphasizes clinical and public policy implications. "For subsets of the child and youth population (e.g., those in poverty, children of color, new immigrants), risk factors tend to cluster together. A low-income child who is having difficulty at school more often than not is facing a host of other challenges" (Evans et al., 2013, p. 1388). Measures of

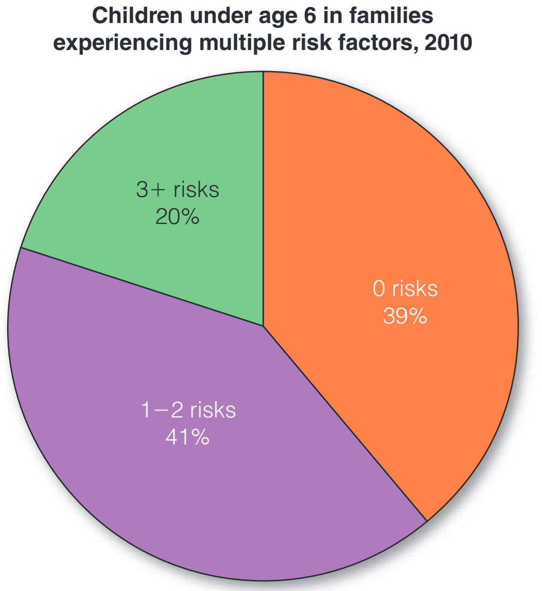

FIGURE 3:4 Numbers of risk factors experienced by children under six years of age.

Source: Evans, Li, & Whipple (2013). Cumulative risk and child development. Psychological Bulletin, 139, 1342–1396.

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cumulative risk, then, allow us to identify the most vulnerable children and emphasize the need for comprehensive interventions that address multiple risks.

Timing of Risk Factors

Understanding the role of timing is also important. Risk factors may have no impact, little impact, or profound impact, depending on the age at which they occur and whether they occur alone or with other risk factors. For example, studies of early childhood poverty suggest that "the longer a 9-year-old child has lived in poverty, the worse his or her mental health at age 17, irrespective of adult income levels" (Evans & Cassells, 2014, p. 291). These children's problematic developmental pathways begin with early experiences of uncontrollable and unpredictable events and are then coupled with additional risk exposure in adolescence. Note that later economic improvements do not balance or cancel out children's early risk histories. Taken together, these data on types of risk factors, numbers of risk factors, and timing of risk factors highlight the complexity of the construct of risk. The following example illustrates this complexity.

The Example of Child Maltreatment

Because the construct of risk is so central to the field of developmental psychopathology, we want to take additional time to consolidate our understanding using the example of child maltreatment. (More detailed information about the origins and course of maltreatment is provided in Chapter 8.) **Child maltreatment** is a broad category that includes physical abuse, sexual abuse, psychological abuse, and neglect; it reflects the "gross violation of the rights of a vulnerable and dependent child" (Cicchetti & Toth, 1995, p. 541). *Child maltreatment is not a diagnosis that is assigned to a child*. Rather, it is a risk factor that affects hundreds of thousands of children each year, costing billions of dollars and resulting in an estimated 1,500 preventable deaths in the United States (DHHS, 2014, http://www.acf.hhs.gov/cb/resource/child-maltreatment-2014).

The U.S. Department of Health and Human Services (DHHS, 2014) identified the primary form of maltreatment in individual cases and reported that 75% of maltreated children were victims of neglect, with a parent or primary caregiver failing to provide basic shelter, nutrition, medical care, and/or supervision. A total of 17% of maltreated children were physically abused. Most cases of maltreatment involved combinations of abuse and neglect, an awful example of multiple risks. DHHS reported that infants and toddlers had the highest rates of victimization and the highest fatality rates. Low socioeconomic status and social isolation were frequently correlated with maltreatment. Most maltreatment (79%) was perpetrated by parents, with neglect as the most common form.

Child maltreatment is a nonspecific risk factor, with increased likelihood of immediate, short-term, and long-term negative developmental outcomes. There is widespread evidence of physiological impact (e.g., dysregulation of the stress response), psychological impact (e.g., atypical socioemotional development, poor school performance, increased psychopathology), and relationship impact (e.g., disrupted family relationships and peer difficulties). Advocates for children need to think about maltreatment in multiple ways: as its own risk factor, as one of several co-occurring risk factors, and as a marker of other risk factors. Indeed, the constellation of multiple negative experiences that are observed in children who are maltreated is a heartbreaking example of cumulative risk (Horan & Widom, 2015). Maltreatment cannot be traced to a single source, such as parent psychopathology, a parent's own history of being maltreated, poverty, or some constellation of difficult characteristics in a child; instead, we need to think about there being many paths to maltreatment. Although child maltreatment clearly illustrates that risk involves increased vulnerability to a range of distress and dysfunction, all experiences of maltreatment do not inevitably lead to tragic outcomes. The fact that some maltreated children manage to stay on track developmentally and that some of them even exceed all expectations leads to our discussion of resilience.

Resilience and Protective Factors

Remember that resilience is a special instance of adaptation—it is *adaptation in the face of adversity* (Masten, 2014; Rutter, 2012). Children who have all the advantages of life—good health, supportive parents, safe neighborhood, and effective social institutions—and thrive are not "resilient"; they are competent, skillful, blessed, lucky, or some combination of those. Resilient children do well *despite* their individual, family, or social circumstances. These children "worked well, played well, loved well, and expected well" (Werner & Smith, 1982). Three types of resilient children have been described: (1) children with many risk factors who have good outcomes; (2) children who continue to display competence when they are experiencing stress; and (3) children who display good recoveries following stress or trauma. Keep in mind that resilience does not

BOX 3:1

RISK AND RESILIENCE

"Ordinary Magic"

The study of risk and resilience is one of the foundations of the field of developmental psychopathology (Anthony, 1974; Garmezy, 1974; Rutter, 1979). The critical issue behind this important area of research is the investigation of the circumstances and mechanisms by which some children thrive and other children falter under conditions of stress and challenge. This has been a rich research vein, mined by many innovative and talented clinical researchers over the decades (Masten & Coatsworth, 1998; Rutter, 1990; Sroufe, Egeland, Carson, & Collins, 2005). In her influential article "Ordinary Magic," Ann Masten (2001, 2015) highlights several important lessons learned from resilience research. Most important is the somewhat unexpected finding that resilience turns out to be the rule in development rather than the exception.

There is now abundant evidence of how resilience "arises from the normative functions of human adaptational systems" (Masten, 2001, p. 227), and this resilience is an example of children's self-righting tendencies. Consequently, even under circumstances of extreme stress, resilience is the likely outcome if basic systems are in place and basic needs are met. These needs include consistent caregiving and cognitive, emotional, and social nurturing. Resilience is observed in many children who experience poverty, in many children who struggle with physical illnesses, and in many children who are victims of natural disasters. Of course, if children's needs are compromised, even conditions of very low stress may result in problematic development and psychopathology. Masten (2001, p. 235) concludes: "What began as a quest to understand the extraordinary has revealed the power of the ordinary." We have reason to be optimistic about the effectiveness of early interventions and efforts to strengthen coping and minimize risk for all children and families. Enhancing resilience will likely "cascade forward in time to benefit . . . communities, societies, and future generations (Masten, 2015, p. 305)

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require "generally superior functioning," but rather better-than-expected functioning, or "relatively better functioning compared with others experiencing the same level of stress or adversity" (Rutter, 2012, p. 336).

Developmental psychopathologists agree that resilience is *not* a trait or characteristic that certain children have and others do not. Instead, resilience is a process, a capacity that develops over time (Luthar, Cicchetti, & Becker, 2000; Shiner & Masten, 2012). Thus, some children display certain types of resilience but not others (e.g., keeping up grades while continuing to struggle emotionally) or resilience that builds up over a period of years (e.g., keeping up grades, mending friendships, and then repairing self-image; see Box 3:1). It is important to emphasize that children's resilience is embedded in particular contexts. Children and adolescents interact with their families, their social and community groups, and within their culture to achieve individually and culturally relevant resilience (e.g., staying in school or caregiving for younger siblings) (Masten, 2014; Ungar, 2010).

Definitions of resilience emphasize positive developmental outcomes. In Chapter 1, we discussed whether definitions of abnormality should focus on adequate or optimal adaptations; we now consider whether positive outcomes are simply the absence of clinically significant disorders, or whether the presence of joy and accomplishment is also important (Luthar et al., 2014; Masten & Reed, 2002). We need to acknowledge the range of resilient outcomes that we are likely to observe, from staying out of trouble with the law, to maintaining positive relationships, to finding gainful and meaningful work, to exceptional achievement. We also "need to move beyond social conformity and academic grades to focus on behavioral manifestations of kindness, generosity, and selflessness" (Luthar et al., 2014, p. 136). With these ideas about resilience in mind, we now turn to descriptions of specific protective factors.

Types of Protective Factors

As with risk, we need to consider individual, family, and social types of protective factors (see Table 3:1). The most frequently noted individual factors have to do with children's personality characteristics. Children who have sunny dispositions and who display conscientious and agreeable behaviors fare better (Shiner & Masten, 2012). Further, research suggests that "children who do well in important developmental tasks, whether they face low or high adversity, have the ability to regulate their emotions and apply themselves seriously to schoolwork, as well as the capacity for empathy and connection, and the drive for mastery and exploration.

TABLE 3:1 Child, Family, and Community Protective Factors

WITHIN THE CHILD
Good cognitive abilities, including problem-solving and attentional skills
Easy temperament in infancy; adaptable personality later in development
Positive self-perceptions; self-efficacy
Faith and a sense of meaning in life
A positive outlook on life
Good self-regulation of emotional arousal and impulses
Talents valued by self and society
Good sense of humor
General appeal or attractiveness to others
WITHIN THE FAMILY
Close relationships with caregiving adults
Authoritative parenting (high on warmth, structure/monitoring, expectations)
Positive family climate with low discord between parents
Organized home environment
Postsecondary education of parents
Parents with qualities listed as child protective factors (as previously given in this table)
Parents involved with the child's education
Socioeconomic advantages
WITHIN OTHER RELATIONSHIPS
Close relationships with competent, prosocial, and supportive adults
Connections to prosocial and rule-abiding peers
WITHIN THE COMMUNITY
Effective schools
Ties to prosocial organizations (e.g., schools or clubs)
Neighborhoods with high "collective efficacy"
High levels of public safety
Good emergency social services (e.g., 911 or crisis nursery services)
Good public health and health care availability

Source: Masten & Reed (2002).

However, youths do not need to exhibit unusually high levels of these positive traits for them to attain resilient outcomes in the face of stress and adversity; rather, modestly positive levels of these traits seem to suffice" (Shiner & Masten, 2012, p. 526, emphasis added). In gene-by-environment models, genetic variants (such as the serotonin transporter promotion gene) also might be counted as individual protective factors. As noted in the previous discussion of individual risk factors, not all these factors are necessarily protective in all circumstances. Genetic variants, for example, may be associated with lower rates of some disorders, such as less depression, but not of others, such as no change in rate of antisocial behavior (Rutter, 2012).

Family factors also serve to protect children in difficult situations, such as children living in impoverished circumstances. Characteristics such as family cohesion and warmth are helpful. Having supportive, emotionally available, and determined parents makes it more likely that at-risk children are able to avoid an ever-increasing string of negative events than children with less capable parents. Having positive relationships with siblings and friends also makes a difference. Children who report having a best friend during a negative experience are buffered from some of the consequences of that experience (Adams, Santo, & Bukowski, 2011). In so many noteworthy ways, detailed in upcoming chapters, it is clear that "resilience rests on relationships" (Luthar et al., 2014).

Sociocultural factors are also important. Children whose lives are embedded in ethnic and cultural and religious groups where their well-being is a communal responsibility may have access to support and resources that other children do not. In addition, these resources and advantages, as already noted, are "provided and experienced in culturally meaningful ways" (Ungar, Ghazinour, & Richter, 2013, p. 349). One specific example of an ethnic protective factor is the mental health advantage observed in British Indian children, who display lower levels of externalizing problems (Goodman, Patel, & Leon, 2010). These children benefit, in part, from two-parent families and fewer

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Protective factors, such as positive temperament and a supportive family, promote resilience in the face of stress.

academic difficulties, but much of the source of the advantage remains to be explained. From both theoretical and clinical perspectives, at-risk children with access to economic and political advantages, such as excellent schools, community advocates, and positive diversity experiences, have better outcomes (Causadias, 2013; Masten, 2014).

The social-ecological perspective on resilience asserts that "the more a child is exposed to adversity (e.g., exposure to violence, poverty, or disability), the more the child's resilience depends on the quality of the environment (rather than individual qualities)" (Ungar et al., 2013, p. 350). A number of key environmental factors have been identified that contribute to resilience in children who experience multiple risks. They include "relationships; a powerful identity; power and control; social justice; access to material resources; a sense of cohesion; belonging and spirituality; and cultural adherence" (Ungar et al., 2013, p. 351).

Patterns and Pathways of Protective Factors

Rutter (1987, 1990, 2012) suggests that protective factors influence children's outcomes by (1) reducing the impact of risk, (2) reducing the negative chain reactions that follow exposure to risk, (3) serving to establish or maintain self-esteem and self-efficacy, and/or (4) opening up opportunities for improvement or growth. Reducing the impact of risk involves exposing children to fewer negative events; this is especially critical given the data on the negative effects of cumulative risk. Reducing the impact also may involve altering the meaning of exposure, so that children think about risk factors in less harmful ways. For example, a child who has experienced a traumatic event may be encouraged to see himself or herself as strong or brave in dealing with adversity.

Reducing negative chain reactions has to do with intervening before a series of negative responses or additional negative events occurs. For example, a child who experiences separation anxiety and misses school may be quickly referred for therapy, and a plan may be put into place to return the child to the classroom. With this plan, the consequence of avoiding anxiety by staying home is not reinforced, and academic difficulties resulting from missed class assignments are avoided. As another example, children at risk because they or their siblings have a chronic illness such as diabetes or asthma may be helped to recognize the range of emotional reactions associated with the waxing and waning of severe symptoms. Family members or friends may provide support before children become overwhelmed by frustration or panic.

Developing and maintaining self-esteem and self-efficacy is clearly related to understanding the role of personality characteristics in moderating distress and dysfunction. As an example, a student with dyslexia who is given the opportunity to meet other students with dyslexia is less likely to view information-processing problems as evidence of personal inferiority, lack of intelligence, or insufficient effort. Another way to think about resilience pathways is to consider information on *steeling effects* (also called *strengthening effects*). Steeling involves "repeated brief stress experiences that are not accompanied by overall adversity or deprivation" (Rutter, 2012, p. 338). For instance, children who experience disruption and conflict in family and school settings following a parent's unexpected unemployment may rebound if the negative events are time-limited and are not embedded in a larger, harmful context.

Opening up opportunities for improvement and growth involves the appreciation of turning points in children's lives. Recognizing the particular developmental challenges that children face and then taking advantage of both expected and unexpected bumps in the road of development may have noticeable effects. For a straightforward example, consider that a move to a new neighborhood may allow a child to make other friends. Taking a more life span–oriented approach, we also can look toward later developmental stages (e.g., adolescence or young adulthood) for experiences that help compensate for poor outcomes in childhood. As Rutter (2012, p. 341) explains, "appropriate experiences in adulthood can do much to counter the effects of earlier adversities. It needs to be noted, however, that such experiences are not simply pleasurable happenings but, rather, experiences that create a helpful discontinuity with the past."

The Example of Child Maltreatment

Returning to the example of child maltreatment, concerned adults must focus on ways to promote psychological wellness in at-risk children, and both theory and research can guide adults in their efforts. Data suggest that many children and adolescents who experience physical or sexual abuse display resilience throughout their lives (DuMont, Widom, & Czaja, 2007; Perkins & Jones, 2004). *This resilience, of course, in no way minimizes the moral or legal wrongfulness of maltreatment.* Rather, it shows us that parents, teachers, and mental health professionals must work together to identify protective factors at individual, familial, and social levels: resources such as self-esteem, family and peer support, a positive school climate, the presence of other caring adults, and access to both short- and long-term treatments (Perkins & Jones, 2004; Ungar et al., 2013).

Resilience, then, reflects the combined contributions of protective factors from the individual, family, and social levels. So a child judged to be resilient in the face of early maltreatment, despite a chaotic and inconsistent home, may have exceptional personal strengths, such as an easy temperament, strong intellectual abilities, and a warm personality that draws adults and peers close. Equally important are ecological factors such as stable living situations, neighborhood advantages, and social opportunities (DuMont et al., 2007; Ungar et al., 2013). We will return to the topic of resilience in maltreated children in Chapter 8.

Research Strategies in Developmental Psychopathology

As in developmental psychology and psychology in general, research in developmental psychopathology takes advantage of all the core research methodologies, including case studies, correlational approaches, and experimental and quasi-experimental designs. In addition, there are a number of distinctive research methodologies with special importance for investigators in developmental psychopathology. We will focus on three especially relevant issues related to these methodologies: cross-sectional versus longitudinal approaches; complex hypotheses and complex models; and research in real-world settings with practical applications.

Cross-Sectional and Longitudinal Approaches

Cross-sectional research involves the collection of data at a single point in time, with comparisons made among groups of participants. For example, we might ask children in the first, fourth, and seventh grades, in the middle of the school year, about their daily hassles. We then compare the children's replies, looking for age-related differences among the younger and older children (e.g., how are the first graders different from the fourth graders, and are either or both groups different from the seventh graders?). **Longitudinal research**, in contrast, involves the ongoing collection of data from the same group of participants, for the study of individuals over time. With this approach, we also recruit first graders in the middle of their school year and talk with them about their hassles, but then we wait until this same group is in the fourth grade before we collect more data, and then we wait again until the group is in the seventh grade. The longitudinal approach allows us to interpret and discuss data with respect to age (e.g., first versus fourth versus seventh graders) *and* individual differences (i.e., specific children or groups of children whose hassles increase or decrease over the course of their school years). The research goals for the two types of studies are different. The cross-sectional study focuses on identifying age-related differences (or outcomes at a particular point in childhood). Cross-sectional research has the advantage of providing answers quickly, but the disadvantage of sampling different individuals at different ages. The longitudinal study provides additional data and highlights the developmental processes that occur for the same children across a significant span of time.

Although longitudinal research in developmental psychopathology has occurred for decades, it has become an increasingly common research methodology. Murphy's groundbreaking studies of children's coping (Murphy, 1962, 1974; Murphy & Moriarty, 1976) and Robins's work on deviant children (Robins, 1966) are important early examples of longitudinal investigations of adaptive and maladaptive developmental pathways. The Great Smoky Mountains Study (GSMS), an epidemiological study of risk and prevalence of disorder and the outcomes of disorder for youth in North Carolina, is a more contemporary illustration (see Box 3:2).

Current research on **developmental cascades** provides a number of excellent examples of longitudinal methodologies and goals. Developmental cascades refer to "the cumulative consequences for development of the many interactions and transactions . . . that result in spreading effects across levels, among domains at the same level, and across different systems or generations" (Masten & Cicchetti, 2010, p. 491). Because the construct of cascades assumes effects that spread over time, longitudinal research is required. Developmental cascades may be positive or negative. In examples with positive outcomes, "effectiveness in one domain of competence in one period of life becomes the scaffold on which later competence in newly emerging domains develops: in other words, *competence begets competence*" (p. 492). In an example with a negative outcome, "behavior problems arising in the family prior to the school years . . . are carried forward into the school context by the child, leading to problems in two new domains of academic and social competence" (p. 492). In another example, multiple measures of competence were linked to various negative outcomes from childhood through young adulthood. Longitudinal analyses provided evidence that "prior successes or failures in social and academic competence

BOX 3:2

RISK AND RESILIENCE

The Great Smoky Mountains Study

The Great Smoky Mountains Study (GSMS) is an important example of a longitudinal study contributing to our evolving understanding of developmental psychopathology. Launched in 1993, the GSMS began following 1,420 children aged 9 to 13 years old living in rural North Carolina. The initial project focus was on the relationship between the development of psychiatric disorders and utilization of mental health services, but the study has provided important data, spanning decades, that go far beyond that early focus. Researchers working on the GSMS addressed questions of prevalence and trajectory of psychiatric disorders, access to and efficacy of treatment, risk and protective factors, and gender differences in age of onset and prevalence of disorders (Costello, Copeland, and Angold, 2016). The ability to apply new scientific techniques to analyze data collected years earlier has been among the most compelling aspects of the Great Smoky Mountains Study. For example, advances in the field of genomics are now allowing researchers to conduct sophisticated genetic analyses on small blood samples collected years earlier (Costello et al., 2013).

In addition to basic epidemiological data, findings from the GSMS have expanded our understanding of the often complex relationship between psychopathology in childhood and psychiatric disorders of adulthood (Copeland, Shanahan, Costello, & Angold, 2009). As expected, GSMS researchers found that the majority of adults diagnosed with a disorder also met the diagnostic criteria for a disorder during childhood. However, while there were examples of *homotypic* prediction (adult disorder predicted by the same disorder in childhood), such as early depression predicting later depression, *heterotypic* prediction (specific adult disorder linked to different or multiple earlier disorders in childhood) was frequently observed. For example, oppositional defiant disorder was part of the developmental history of a wide range of disorders in adulthood.

Another example of the nuanced and complex pathways being revealed by the GSMS resulted from researchers' consideration of the familiar finding that clinical depression is twice as common in women as in men. Their investigation led to the surprising finding that low birth weight was significantly linked to later depression for women but not for men. More specifically, low-birth-weight girls developed depression at much higher rates between the ages of 13 and 16, suggesting an interaction between biological vulnerabilities present early in life and hormonal changes occurring in puberty (Costello, Worthman, Erkanli, & Angold, 2007). The GSMS also produced longitudinal data demonstrating that anxiety disorders are an especially common mental health problem across development, with the transition from adolescence to adulthood representing a period of especially heightened risk (Copeland, Angold, Shanahan, & Costello, 2014).

The GSMS also has shed light on how social and economic factors can affect mental and physical health in adulthood—for worse and for better. Initial studies showed that young adults who were bullied as children tended to have significant mental health problems, including anxiety disorders and depression (Copeland, Wolke, Angold, & Costello, 2013). More recent studies have demonstrated that a history of being bullied predicts specific health problems involving low-grade systemic inflammation, which in turn links to physical disorders such as cardiovascular disease and metabolic syndrome (Copeland et al., 2014). In contrast, positive changes in the lives of children and their families in the study were shown to improve mental health outcomes.

Striking evidence of this resulted from a natural experiment that occurred during the course of the GSMS (Costello, Compton, Keeler, & Angold, 2003). The region covered by the study included a Cherokee reservation. Several years into the study, a casino opened on the reservation, and profits from the casino were distributed to every member of the tribe. Four years after this income distribution began, 14% of the families in the study moved above the federal poverty level. Researchers were able to compare the prevalence of mental health problems in these families in the years before and after the distribution of the income supplement. They found that the frequency of mental health problems among these children dropped significantly after their families moved out of poverty. In fact, their psychiatric profiles came to look very similar to children in families that had never lived in poverty. So while biology is clearly an important part of the story of risk and resilience, environmental factors, such as poverty, play a powerful mediating role as well.

had spillover effects on subsequent internalizing symptoms," with an especially noteworthy impact on social competence for boys (Obradovic, Burt, & Masten, 2010, p. 98). In one final example, cascades are observed across generations. In this research, first-generation adolescent problem behavior predicted first-generation lower socioeconomic status, greater family stress, and reduced emotional and material investments. These, in turn, predicted next-generation problem behavior in children (Martin et al., 2010).

Complex Hypotheses and Complex Models

It is very clear that our research designs are becoming ever more complicated (again, see Figure 3:1). We not only stretch our data collection over months, years, and decades, but also examine multiple variables at each particular point in time. In keeping with the interdisciplinary model of developmental psychopathology, researchers are including biological, psychological, and social variables in their studies. Whereas we once focused our investigations on children and their immediate environments, we now broaden our approaches to include macrosystems such as culture.

Current research on child maltreatment provides other examples of complexity. Instead of examining a single variable (such as maltreatment versus no maltreatment) and its association with outcome, investigators account for multiple characteristics of that variable (type of maltreatment, frequency of maltreatment, and source of maltreatment), leading to a better understanding of risk and resilience. Danielson et al. (2005) found that adolescents who had experienced both physical and sexual abuse reported more symptoms of depression than adolescents who had experienced only physical abuse (and adolescents who had no history of abuse). Adolescents who experienced chronic abuse were more depressed than those who experienced single abusive episodes. And girls who were maltreated were more depressed than boys who were maltreated.

Some of the most recent research on maltreatment has focused on the interplay between genes and the environment. In contrast to earlier descriptions of the impact of genes and the environment as separate and independent, current conceptualizations emphasize the ongoing transactions between genetic and environmental factors. These transactions are observed across many levels [e.g., cellular, neural, physiological, psychological of analysis (Gottlieb, 2007)]. We now know that, in important and persistent ways, environments direct and guide development (Meaney, 2010; Stiles, 2009) and that the construct of environment must be broadly imagined (from intrauterine to cultural environments). We also know that the timing of particular environmental influences (e.g., exposure to neurotoxins, awful rearing circumstances) is important (Rutter, 2011; Sroufe, 2009; Stiles, 2009). Indeed, according to Sonuga-Barke & Halperin (2010, p.114), "serious science is now more than ever focused on the power of the environment to shape neurodevelopmental processes and pathways."

Gene-by-environment processes and interactions specify the role of genetics in influencing children's vulnerability to particular risk factors. These interactions are common in both typical and atypical development (Duncan, Pollastri, & Smoller, 2014; Gottlieb, 2007; Rutter, 2011; also see Chapter 2, Table 2:2). Some of the most compelling data on gene-by-environment processes come from investigations of variation in two genes (*MAOA* and *5-HTTLPR*) involved in early brain development and the regulation of mood, behavior, and stress. Early in the 2000s, Caspi and colleagues published research on developmental outcomes following maltreatment suggesting that poor outcomes were more likely if children had certain genetic variants. These findings led to other research that attempted to replicate, refine, and extend our understanding of gene-by-environment processes (Duncan et al., 2014). Examples of this kind of research will be provided throughout the textbook.

In addition to the emphasis on complex hypotheses and complex models, we pay more attention to the variety of available methods for collecting data. Quantitative methods have been the standard for years, but there is renewed interest in qualitative methods such as diaries, narratives, and holistic observations (Salcuni, Capella, & Lis, 2016; Shepherd & Waddell, 2015).

Research in Real-World Settings with Practical Applications

One of the more compelling aspects of research in developmental psychopathology is its concern with practical applications and public policy implications, and its focus on child advocacy (Shonkoff & Fisher, 2013; Toth, Pianta, & Erickson, 2011). These concerns are at the core of discussions of **translational research**, or research designed, conducted, and interpreted with meaningful applications and social value in mind (Guerra, Graham, & Tolan, 2011; Wiggins & Monk, 2013). The goal of translational research is "to move basic findings more rapidly through the pipeline into novel treatments and preventive efforts to reduce or alleviate physical, emotional, and behavioral health problems" (Gunnar & Cichetti, 2009, p. 6). Further, "it is not enough for the basic researchers to hand their findings off to the clinicians and prevention scientists who then develop novel treatments and approaches. The information gleaned from testing those treatments and intervention programs need to feed back to inform basic research" (p. 6). Cooperation and collaboration are required: between researchers who work with animals and researchers who work with humans; between researchers who focus on adults and researchers who focus on children; between researchers who investigate typical development and researchers who investigate atypical developments; and between researchers and clinicians. One example of such collaboration and cooperation is a research project designed to prevent maltreatment in families with a young mother living in poverty, with the Mt. Hope Family Center, the University of Rochester Medical School Departments of Pediatrics and Social Work, and the Society for the Protection and Care of Children all working together to promote healthy outcomes (Toth et al., 2011).

Key Terms

Psychopathology (p. 32)
Developmental psychopathology (p. 32)
Developmental pathways (p. 34)
Equifinality (p. 34)
Multifinality (p. 34)
Continuity (P. 36)
Discontinuity (P. 36)
Coherence (p. 36)
Competence (p. 36)
Risk (p. 38)
Risk factors (p. 38)
Resilience (p. 38)
Protective factors (p. 38)
Child maltreatment (p. 40)
Cross-sectional research (p. 44)
Longitudinal research (p. 44)
Developmental cascades (p. 44)
Translational research (p. 46)

Chapter Summary

- Developmental psychopathology focuses on the developmental context within which maladaptive patterns of emotion, cognition, and behavior occur.
- The study of developmental pathways highlights patterns of adjustment and maladjustment over time.
- *Equifinality* refers to developmental pathways in which differing circumstances lead to the same diagnosis, whereas *multifinality* refers to developmental pathways in which similar beginnings lead to different outcomes.
- The developmental pathways model emphasizes the ongoing possibility of change over time.
- Coherence in development reflects the logical links between early developmental variables and later outcomes. Continuity is found in understanding the relationship between outcomes and the variables that lead to stability or change.
- Competence, from a developmental perspective, reflects effective functioning in relation to relevant developmental tasks and issues; evaluations of competence are embedded in the environment within which development is occurring.
- *Risk* is defined as increased vulnerability to disorder, whereas risk factors are the individual, family, and social characteristics that are associated with this increased vulnerability.
- *Resilience* is defined as adaptation (or competence) despite adversity, and protective factors are the individual, family, and social characteristics that are associated with this positive adaptation.
- The study of child maltreatment illustrates the varied effects and range of outcomes associated with developmental risk factors.
- Cross-sectional research involves the collection of data from comparison groups at a single point in time. Longitudinal approaches involve the ongoing collection of data from the same individual or group of participants over time.
- The cumulative or spreading effects (both positive and negative) of ongoing developmental processes, across domains, are represented in developmental cascade models.
- Gene-by-environment interactions represent the expression of genetics in the context of life circumstances. This model is commonly used to consider children's vulnerability to particular risk factors experienced in typical and atypical development.
- The purpose of translational research is to facilitate the application of basic research to clinical practice, and to inform research with findings and insights drawn from applied practice.

4 Classification, Assessment and Diagnosis, and Intervention

CHAPTER OUTLINE

Classification
Categorical Classification
Dimensional Classification
Developmental Contributions to Classification Systems
BOX 4:1 EMERGING SCIENCE: Research Domain Criteria
Two Classification Concerns: Heterogeneity and Comorbidity
Current Views on Classification
Assessment and Diagnosis
Definitions of Assessment and Diagnosis
Methods and Processes of Assessment
The Case of Eden
The Case of David
The Case of Rohan
BOX 4:2 THE CHILD IN CONTEXT: Agreement and Disagreement between Parents and Children
Intervention
The Efficacy of Psychotherapy for Children and Adolescents
Primary, Secondary, and Tertiary Interventions
Working with Children
Working with Parents and Families
Working with Schools and Communities

ON THE ONE HAND, we have infants, children, and adolescents who are struggling, distressed, and deeply pained. On the other hand, we have theories about typical and atypical development, research on risk and resilience, and beliefs about psychotherapy. In this chapter, we are going to make specific and practical connections between the children and the theories. The most basic questions are addressed: What kinds of disorders do children experience? Which disorder best describes a particular child's distress and dysfunction? And what can be done to help?

Classification

Given that it is useful to conceptualize some forms of children's struggle, distress, and pain in terms of disorder, we need to have some reasonably organized way to think about different kinds of disorders. We need classification. **Classification** is defined as a system for describing the important categories, groups, or dimensions of disorder. Classification is differentiated from **diagnosis**, which is the method of assigning children to specific classification categories.

A good classification system serves several clinical, research, and theoretical purposes. It enhances clinical utility; that is, it helps clarify thinking about the expression and emergence of particular disorders, as well as about prognosis and treatment decisions. For example, if we know that a child's pattern of cognitive, emotional, and behavioral difficulties is consistent with the clinical presentation of autism spectrum disorder, then we know something important about the cause and course of the disorder, and we know something useful about effective interventions. Classification also allows mental health professionals to communicate effectively about their clients and various psychopathologies. If we are working with a child with autism spectrum disorder, then we can discuss the relevant options for treatment with parents, other clinicians, or teachers.

Classification also improves research efforts. Different investigators with similar understandings of disorders are better able to develop theories about the nature of specific psychopathologies, explain hypotheses, recruit participants, and talk about data. Finally, efforts to improve classification contribute to the ongoing revisions of the principles and practices of developmental psychopathology discussed in the previous chapter. Across all these classification purposes, we want to create and/or increase order and organization to meaningfully inform our work with children.

As we consider various classification schemes, it is important to keep in mind that any classification results in the loss of individual information. Classification in developmental psychopathology is focused on the many ways in which children with particular disorders are *alike.* But we know, of course, that each child is unique in his or her pattern of difficulties (and strengths). Knowing, for instance, that a child displays the distress and dysfunction associated with depression (in contrast to anxiety) is one significant source of information, but it is also important to evaluate each depressed child's unique circumstances.

Categorical Classification

Categorical classification depends on identifying sets of symptoms that co-occur (or hang together) and that collectively are best understood as distinct, different disorders connected to the categorical models discussed in Chapter 2. **Categorical classification** assumes that there are groups of individuals with relatively similar patterns of disorder. With an ideal categorical scheme, each disorder would have its own specific etiology, course, and treatment.

The Diagnostic and Statistical Manual

The best-known—although far from ideal—example of categorical classification is the **Diagnostic and Statistical Manual (DSM)** of the American Psychiatric Association. Introduced in 1952, the DSM was designed as a practical tool for clinicians. Despite that era's pervasive psychoanalytic influence, the DSM was intended to be atheoretical and primarily descriptive, providing useful information about the clinical picture and the course of psychopathology. The DSM is tied, in large part, to the *medical model* of psychopathology. Key assumptions of the medical model are that (1) disorders are categorical (i.e., reflecting clear distinctions between healthy and disordered adjustments); (2) disorders are associated with "constitutional dysfunction" (i.e., the idea that the child somehow fails to display his or her natural function) (Wakefield, 1992, 1997); and (3) disorders are endogenous (i.e., characteristic of the individual rather than an individual–environment transaction).

The 1952 DSM included only one separate childhood disorder: adjustment reaction of childhood and adolescence, listed in the section on "transient situational disorders." All other classifications of children's disorders were understood as identical to adult disorders, with the same clinical presentation and prognosis. DSM-II, published in 1968, included nine different disorders observed in children, with two of them, mental retardation and childhood schizophrenia, in a separate childhood section. By 1980, with DSM-III (and 1987, with DSM-III-Revised), 44 child and adolescent disorders were described, with a much larger section specifically focused on disorders diagnosed in early development. DSM-III introduced the system of multiple axes, in which individuals were evaluated with respect to clinical symptoms, as well as important contextual factors such as physical disease and level of stress. Following extensive literature reviews, data analyses, and field trials, DSM-IV was presented in 1994, with over 350 different categories of adult and child disorders. DSM-IV again increased the number of classification categories for children and made special efforts to incorporate more developmental data. In 2000, DSM-IV-TR (Text Revision) was distributed, with additional information provided about many disorders, but with few changes to diagnostic categories or criteria.

The newest version, DSM-5, published in 2013, involved more significant reorganization and revision. In this edition, the arrangement of categories reflects a more developmental perspective. For example, the section on neurodevelopmental disorders (typically first diagnosed in childhood) comes before the section on neurocognitive disorders (typically diagnosed later in adulthood). Descriptions of disorders include age-related factors relevant to diagnosis, as well as information about how symptoms may vary across the lifespan. DSM-5 also represents an attempt to group disorders based on empirical findings from studies of genetics and neuroimaging. For many categories (e.g., autism spectrum disorders and personality disorders), there are important changes to the conceptualization and description of disorder. These changes will be discussed throughout this text.

With any system of classification, we are concerned with indices of reliability and validity. **Reliability** has to do with whether different clinicians, using the same set of criteria, classify children into the same, clearly defined categories. **Interrater reliability** is noted when, for example, two or more clinical psychologists, gathering information about one child's developmental history and current difficulties, come to the same decision about the type of disorder. **Cross-time reliability** is noted when a child is similarly classified by the same clinician at two different points in time. Especially for disorders that are chronic, such as intellectual developmental disability, a classification system that includes descriptions of both continuity and change is important. With a reliable classification system, a child with intellectual developmental disorder would be similarly classified at age 3 and at age 10, even though there would be somewhat different patterns of symptoms and adjustments.

Validity has to do with whether the classification gives us true-to-life, meaningful information. Specifically, **internal validity** tells us something important about the etiology of a disorder, or the core patterns of symptoms or difficulties experienced by children with a particular type or subtype of disorder. **External validity** tells us something important about the implications of the disorder. For example, children with specific disorders might be expected to respond favorably to certain interventions.

Dimensional Classification

The DSM approach initially grew out of the subjective impressions and descriptions of experienced clinicians. Over the years, a more objective strategy for conceptualizing disorder has emerged (for both the DSM and other classification systems). Achenbach (1997) characterizes this empirical approach to classification as a bottom-up process involving (1) the collection of data from children with typical and atypical adjustments, followed by (2) attempts to group the many distresses and dysfunctions statistically into meaningful dimensions (or important characteristics) of disorder. This process contrasts with the top-down approach of clinical classification, which involves (1) the identification of types of disorder, and then (2) the specification of symptoms of the disorders. Owing much to Achenbach's decades-long work, this type of classification is based on statistical techniques that identify key dimensions of children's functioning and dysfunction, with the assumption that all children can be usefully described along these dimensions. Differences among children, then, reflect differences in *degree* (or quantity) of a dimension rather than differences in *kinds* of dimensions.

The two most commonly identified dimensions of disorder include (1) an **externalizing dimension**, with undercontrolled behaviors such as oppositional or aggressive behaviors that are often directed at others; and (2) an **internalizing dimension**, with overcontrolled behaviors such as anxiety or social isolation that are often directed toward the self. For both externalizing and internalizing dimensions, a child would be diagnosed with a disorder when he or she exceeded a certain number of symptoms or presented a pattern of symptoms that reflected significant impairment. In addition to the basic internalizing versus externalizing distinction, descriptions of important specific dimensions include the following: *withdrawal, somatic complaints, social problems, thought problems, aggressive behavior, delinquent behavior, attention problems,* and *anxious/depressed problems*.

Analyses of these more focused dimensions also take into account age and gender differences in the experience and expression of difficulties. Children may display distress and dysfunction that reflects mostly internalizing difficulties (e.g., a combination of anxious/depressed problems and somatic complaints); mostly externalizing difficulties (e.g., a combination of social problems and aggressive behavior); or a mixture of both (e.g., attention problems, aggressive behavior, and anxious/depressed problems). Figure 4:1 illustrates one way that internalizing and externalizing dimensions might be mapped. Children low on both internalizing and externalizing dimensions would include a variety of typically

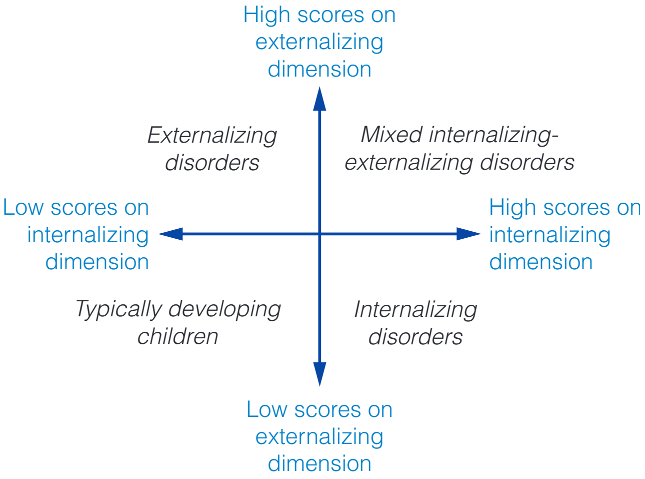
High scores on externalizing dimension
Externalizing disorders
Mixed internalizing-externalizing disorders
Low scores on internalizing dimension
High scores on internalizing dimension
Typically developing children
Internalizing disorders
Low scores on externalizing dimension

FIGURE 4:1 Children's psychopathology along internalizing and externalizing dimensions.

developing children. Children with moderate scores on either or both internalizing or externalizing dimensions might warrant extra attention but would not necessarily meet the clinical or statistical criteria for actual psychopathology. Only those children with extreme scores on either or both dimensions would be diagnosed with a disorder. Internalizing and externalizing disorders involve developmental pathways or trajectories. We want to understand the varied ways in which children display "pure" internalizing, "pure" externalizing, and cooccurring internalizing and externalizing disorders, as well as the risk and protective factors that lead to positive or negative outcomes (Fanti & Henrich, 2010).

Recent statistical analyses of the structure of children's psychopathology point toward a combined dimensional–categorical model, with a hierarchical organization that takes into account both genetic and environmental influences (Lahey, Van Hulle, Singh, Waldman, & Rathouz, 2011; Lahey et al., 2015). These investigations provide important data that help explain some of the overlapping symptoms in many of the DSM categories, as well as the mixed clinical picture displayed by many children and adolescents. The development of an alternative classification system is the focus of the National Institute of Mental Health's Research Domain Criteria (RDoC) project, which involves the identification of dimensions of neurobiology and behavior that cut across traditional categories of disorder (Cuthbert & Insel, 2013; also see Box 4:1).

Developmental Contributions to Classification Systems

Beginning with early attempts to devise useful descriptions of psychopathology, the focus has been on the classification of adult disorders. For accurate classification of child disorders, it is necessary to integrate a developmental perspective into classification systems, emphasizing salient age- and stage-related concerns, as well as descriptions of developmental pathways that incorporate continuity and/or change. This perspective is most frequently observed when, as described in the previous chapter, clinicians conceptualize children's disorders as delay, fixation, or deviance (Fischer et al., 1997). These kinds of conceptualizations depend on a clear understanding of what is typical during particular periods of development and provide one important way to describe development that is off track. But there are other frameworks for examining the way in which children's disorders are embedded in developmental contexts.

One example of a classification scheme that illustrates the connections between typical and atypical development is the *Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood,* published by the Zero to Three Association (1994, 2005). Unlike the DSM, a product of mainly one group of mental health professionals (i.e., psychiatrists), the Zero to Three manual reflects the contributions of multiple disciplines, including psychology, social work,

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Developmental contributions to classification emphasize the ways in which relationship factors influence the development of problems and disorders.

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BOX 4:1

EMERGING SCIENCE

Research Domain Criteria

In contrast to the Diagnostic and Statistical Manual (DSM), a categorical, clinically focused tool, the Research Domain Criteria (RDoC) is a dimensional, research-oriented classification system (http://www.nimh.nih.gov/research-priorities/rdoc/index.shtml). The RDoC project, launched in 2009 by the National Institute of Mental Health, identifies a preliminary set of neurobiological and behavioral dimensions that are believed to underlie a variety of typical and atypical outcomes (Cuthbert & Insel, 2013). These dimensions include negative valence systems (e.g., fear, anxiety); positive valence systems (e.g., approach motivation, reward learning); cognitive systems (e.g., attention, memory); arousal/modulatory systems (e.g., arousal, sleep); and systems for social processes (e.g., affiliation, social communication). With a specific focus on research that reveals and helps explain the underlying causes of disorder, the goals of this classification project include a better understanding of how to match treatments to individuals given particular dimensional information about that individual (Cuthbert & Insel, 2013).

As noted in the text, there are a lot of data that emphasize the overlap among categories of disorder. RDoC specifically targets that overlap, hoping to make "transdiagnostic discoveries" (Franklin, Jamieson, Glenn, & Nock, 2015, p. 280). One example of this type of transdiagnostic research involves studies that examine a single dimension (such as negative emotionality or difficulties with emotion regulation) that predisposes children to a variety of negative outcomes (Olino, Dougherty, Bufferd, Carlson, & Klein, 2014; Rhee, Lahey, & Waldman, 2015; Tackett et al., 2013). Another example of transdiagnostic research is focused on the neuropsychology of decision-making difficulties across different types of disorders. Researchers reported that the impaired decision making observed in children with ADHD reflected impulsivity and disinhibition, whereas the impairments observed in children with conduct disorder reflected risk taking and a failure to learn from consequences. For children with anxiety, impaired decision making involved being oversensitive to negative reactions; children with depression displayed a lack of motivation and indecision (Sonuga-Barke, Cortese, Fairchild, & Stringaris, 2016). So there is a shared dimension of impaired decision making in many children who struggle, but there are also important distinctions. "A depressed teenager may find it hard to motivate herself to go to a party, whereas someone with ADHD may find it hard to generate and follow through a plan to get there …. A person with anxiety might attend the party but spend most of the night scrutinizing their own actions and worrying about how they are perceived by others" (Sonuga-Barke et al., 2016, p. 322).

There are a number of child clinical studies that use the RDoC framework, including work on classification issues related to ADHD and bipolar disorder (Kleinman et al., 2015) and work related to treatments for children who have experienced maltreatment (Kaufman, Gelernter, Hudziak, Tyrka, & Coplan, 2015). From a developmental psychopathology perspective, developmental pathways, continuity and change over the lifespan, and the environments in which children are embedded (e.g., families, neighborhoods) must be addressed as part of the RDoC initiatives (Franklin et al., 2015; Garvey, Avenevoli, & Anderson, 2016).

Although there is much potential value in the RDoC framework and the research being conducted, important concerns remain. The most significant of these concerns is likely the emphasis on neurobiology. Although conceptualized as a classification system that balanced neurobiological dimensions and behavioral dimensions, the research so far appears to place more emphasis on neurobiology, with frequent descriptions of psychopathology as a brain disorder (Franklin et al., 2015). Further, the back-and-forth discussions and collaborations that occur between researchers and clinicians need attention: "For scientists to unilaterally reject categorical models and replace them with dimensional ones (even of those proved to be in fact more accurate), would break a crucial bridge of communication between the clinic and the lab" (Coghill & Sonuga-Barke, 2012, p. 476). And finally, we need to think clearly about the promise of biological models and what they do (and do not) explain. "It is evident that there have been spectacular advances in psychiatric genetics, but it is equally apparent that they do not provide a biological validation of child psychiatry/psychology" (Rutter & Pickles, 2016, p. 404).

nursing, early education, and medical specialties (Egger & Emde, 2011).

Like the DSM, Zero to Three's system is categorical. But the Zero to Three system, focused exclusively on the earliest manifestations of psychopathology, is much more explicit in its developmental orientation. For example, the child–caregiver relationship is understood as a possible locus of disorder. The clinician considers (1) the behavioral quality of the relationship between the child and caregiver, (2) the emotional tone

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of the relationship, and (3) the degree of psychological involvement. Although a number of analyses of the reliability and validity of the Zero to Three system have been completed, much more remains to be done (Egger & Emde, 2011).

Another perspective on developmental approaches to classification involves explicit appreciation of the principles and practices of developmental psychopathology. Yates, Burt, and Troy (2011) describe several ways to improve classification efforts. The first is an emphasis on *developmental pathways* and increased focus on the timing of the disorder's onset. Whether a disorder has an early as opposed to a later onset may point toward different etiological factors or provide information about well-timed interventions. The second way to improve classification is to focus on *age-salient references*, with better understanding of the expression and meaning of disorder given a child's age, developmental challenges, and available resources. Another way to improve classification is to include *multilevel analyses*, with consideration of genetic, physiological, psychological, familial, and sociocultural influences on the emergence and maintenance of disorder.

Two Classification Concerns: Heterogeneity and Comorbidity

All classification efforts must contend with two real-life concerns: **heterogeneity** and **comorbidity**. Heterogeneity within categories or groups of disorders involves the ways in which children with the same disorder or diagnosis [e.g., attention deficit hyperactivity disorder (ADHD) or generalized anxiety disorder] display idiosyncratic sets of difficulties or symptoms. We expect some degree of similarity, of course, in the clinical presentations of children with the same disorder. But the DSM-5 description of any particular disorder usually includes a variety of domains and symptoms, allowing for countless combinations. For instance, two children may each receive a diagnosis of anxiety disorder with some shared symptoms, but also nonshared symptoms. Each child's experiences of anxiety may differ in terms of the settings that elicit anxiety, the length of time the anxiety lasts, and whether support from a parent improves the short-term outcome. Comorbidity across categories or groups of disorders involves the co-occurrence of two or more disorders in one individual. Here, a child might be struggling with any two disorders: a mood disorder *and* a substance abuse disorder, or an anxiety disorder *and* an eating disorder. A more specific way that researchers and clinicians have defined comorbidity involves the co-occurrence of two or more disorders where the cooccurrence is greater than chance (Costello, Foley, & Angold, 2006; Cramer, Waldorp, van der Maas, & Borsboom, 2010). That is, we are not looking for *any* two disorders, but rather two disorders that are frequently observed together. This definition makes explicit the idea that comorbid conditions are not random. Common, nonrandom pairings in children include ADHD and conduct disorder, autism and intellectual developmental disorder, and depression and anxiety.

Comorbidity occurs for several reasons. First, given that all classification emphasizes group similarities rather than unique variations, some children are not going to match up well with strictly defined categories. The clinical picture for these children may include a mix of symptoms from different disorders. Clinicians may then diagnose two disorders, neither of which is quite right (or quite wrong). Alternatively, categories that are too loosely or vaguely defined, with lots of common symptoms, also contribute to instances of comorbidity, with some children meeting multiple sets of criteria. Indeed, "diagnostic categories overlap to a much greater extent than assumed in the past" (Rutter & Pickles, 2016, p. 401). Even in cases where symptom overlap is observed, however, there also may be "meaningful differences among diagnoses. For example, although autism and ADHD overlap, only autism is associated with the onset of seizures in late adolescence and only ADHD responds to stimulant medication" (p. 401). Accurate assessments of disorders and comorbidity clearly require careful consideration of both classification information and child information.

One of the most important research findings related to comorbidity involves data suggesting that the overlaps between individual disorders (e.g., depression and anxiety, or conduct disorder and anxiety) and between overall groups of internalizing and externalizing disorders are the result of underlying factors that influence the emergence of many different disorders. For instance, a child who scores high on the dimension of negative emotionality is at greater risk for both internalizing and externalizing disorders (Hink et al., 2013; Rhee, Lahey, & Waldman, 2015; Tackett et al. 2013; also see Box 4:1). As an example, a child might be prone to frequent experiences of frustration, fear, or anger. These experiences may interfere with the child's development of positive relationships with parents and with peers. The later emergence of oppositional defiant disorder, depression, and/or conduct problems directed at peers might all relate back to the initial psychopathological process (an example of *multifinality*, discussed in the previous chapter).

Current Views on Classification

There is empirical support for both categorical and dimensional classification (Rutter, 2013). For many disorders, including conduct disorder, ADHD, and depressive disorders, research underscores the continuity between typical and atypical presentations (consistent with dimensional classification strategies). For other disorders, including severe intellectual disabilities and attachment disorders, research identifies important discontinuities in typical and atypical development (consistent with categorical classification strategies). Rutter (2013) emphasizes the need to keep an open mind about both categorical and dimensional approaches. In fact, he maintains that "the question is not what is the reality in nature but, rather which is more useful in relation to the particular questions being addressed" (Rutter 2013, p. 1210). In our case, the questions have to do with understanding and responding appropriately to children's distress and dysfunction.

Coghill and Sonuga-Barke (2012) address concerns about classification from another perspective. They note the many ways in which competing views on classification are embedded in larger sociocultural contexts. In the discussion of classification as a practical clinical reality, they state, "It is a clinician's job to make difficult practical decisions about *whether* an individual should receive specialist health interventions and *which* interventions they should receive" (Coghill &Sonuga-Barke 2012, p. 470; emphasis in original). In the discussion of politics and economics, they assert that "childhood disorders arouse strong, but very different, public and political reactions from different groups and individuals with different agendas" (p. 470). Across all types of classification, it is imperative that we are able to provide accurate data about the validity of mental health problems and advocate for services and resources (Coghill & Sonuga-Barke, 2012).

Assessment and Diagnosis

Definitions of Assessment and Diagnosis

In order to evaluate a child, we need some orderly way of gathering information. **Assessment** involves the systematic collection of relevant information and is used to solve two kinds of practical problems described by Costello and Angold (1996): (1) differentiating everyday problems or transient difficulties from clinically significant psychopathology, and (2) classifying and caring for those who have been identified as having disorders.

The first practical problem for assessment involves a decision about whether diagnosis is necessary or appropriate, and that necessitates thinking about disorder within a developmental framework. After collecting information about a child's various difficulties (and strengths), current distress and dysfunction (and achievements), and likely outcomes, a clinician may conclude that a child is functioning within the normal range or is experiencing a "bump-in-the-road" kind of problem. In these cases, although advice or support may be provided, a diagnosis is not made. In other cases, a clinician may become convinced that the child displays more serious maladaptation. Assessment, then, would likely result in a specific diagnosis.

The second practical problem involves the method of assigning individuals to specific classification categories, or *diagnosis*. Diagnosis becomes particularly important when psychologists or other mental health professionals talk to parents about the nature of their child's disorder, when clinical decisions about treatments have to be made, or when insurance companies require verification of a disorder in order to approve reimbursements for the cost of care. With respect to these practical issues, assessment certainly depends on gathering information about the specific distress and dysfunction experienced by a child, but it also must include information about a child's strengths and accomplishments. We need to know what a child does well, not only to help with accurate diagnosis, but also to provide valuable insights about more effective plans for treatment.

After evaluating the intensity, frequency, duration, and pattern of difficulties in a developmental context, we need to decide what the best fit is between the clinical presentation and available classification categories. When choosing the correct category, it is also important to consider whether a child's clinical presentation reflects a single case of disorder, an atypical or mixed-symptom case, or a combination of comorbid conditions. At times, DSM-5 classification requires clinicians to make **differential diagnoses**: decisions about mutually exclusive categories of disorder. For example, a child would not receive a diagnosis of oppositional defiant disorder *and* disruptive mood dysregulation disorder because the defining symptoms of the former are subsumed in the larger symptom set of the latter. Overall, researchers and clinicians are concerned with **diagnostic efficiency**, the degree to which clinicians maximize diagnostic hits and minimize diagnostic misses.

With all these diagnostic issues in mind, it is important to remember that we will always have more children with more kinds of problems than we have categories in which to place them. But as we continue to improve classification and diagnosis, we must emphasize that naming a disorder or diagnosing a child is not the same thing as understanding the disorder or the child. Naming is the first step, not the only step. In addition, we need to remember that assigning a particular child's disorder to a classification category is accomplished at *a moment in time*. Because children change and continue to develop after a diagnosis is made, diagnoses must be periodically reviewed and reevaluated.

A final concern about diagnosis relates to the effects of labeling. As discussed at the end of Chapter 1, the stigmatization of mental illness is difficult for children and their families to manage. According to Lieberman, Wieder, and Fenichel (1997, p. 12), "It is essential to remember that people are not defined by their psychiatric diagnoses. Individuals may have a disorder, but they also possess a core human dignity as well as areas of experiences where they function flexibly, competently, and creatively." The effects of labeling are often viewed as damaging. For example, we are concerned with the self-fulfilling prophecy of children who internalize adult expectations for struggle or failure given a particular diagnosis (such as autism spectrum disorder or ADHD.

We must also recognize, however, that labels may have some positive impact (Egger & Emde, 2011). Parents who have been confused and upset by their children's behavior, have questioned their own competence, and have despaired over their children's futures may view labels as providing some validation for their experiences. In addition, labels may provide both parents and children with knowledge about ways to deal with the difficulties of disorders. Given these multiple perspectives, negotiation among professionals, parents, and children for particular labels with particular meanings is an ever-present issue.

Methods and Processes of Assessment

The Case of Eden

> Eden is a nine-year-old fourth grader referred for a psychological evaluation by her parents at the suggestion of her teacher. Eden began to experience school difficulties in third grade that continued into fourth grade and that have gotten considerably worse as the school year goes on. She has difficulties with completing work, especially on long-term projects, and often fails to turn in assignments; her grades are consistently lower than what either her parents or her teachers believe she is capable of. ■

The Case of David

> David is a 12-year-old sixth grader referred by his parents for evaluation. He currently resists going to school in the mornings due to his extreme and disabling anxiety. He also experiences severe headaches before leaving home. Socially, David has become increasingly isolated from his classmates and generally plays alone or with a neighbor who is two years younger than he is. ■

The Case of Rohan

> Rohan is a 4½-year-old boy referred for assessment and therapy by his pediatrician after she noted that Rohan and his mother's interactions in the office were characterized by frustration and conflict. Additional concerns expressed by Rohan's mother and his day care provider included oppositionality, frequent temper tantrums, and occasional physical aggression. There have been several instances when he has kicked and bitten others at preschool and at home. ■

In the real world, clinical assessments begin with a specific concern, question, or problem. In these cases, we think about whether Eden's school difficulties are the result of anxiety, ADHD, or a learning disorder. We think about whether David's distress is best characterized as anxiety or depression, whether it is going to resolve on its own, and available options for treatment. We think about whether Rohan's dysfunction reflects the emergence of a more severe psychopathology such as disruptive mood dysregulation disorder, which requires intensive intervention, or whether we are dealing with less severe psychopathology, such as oppositional defiant disorder, which calls for treatment focused on temperament and parenting issues.

Specific concerns influence the assessment strategy that is devised, but most assessments also include a more general overview of the child's circumstances. Clinicians should, of course, respond to the presenting concern, but they need to remain alert to many kinds of contextual information, other possible problems, and the child's positive characteristics. A narrow focus early in the assessment process may lead to diagnostic error, with a quick confirmation of the initial hypothesis without consideration of alternatives.

Assessment Technique: The Interview

Assessments usually begin with **interviews**. Initial interviews allow parents and children to explain their concerns and, more broadly, to tell their stories. Interviews also provide opportunities to start to build the helping relationship, an especially important consideration when a clinician knows that he or she will be

BOX 4:2

The Child in Context

Agreement and Disagreement between Parents and Children

When thinking about the assessment of a child or adolescent, it makes sense that gathering data from multiple sources provides a more accurate clinical picture than gathering data from a single source. That is, the pieces of information provided by a child, coupled with those provided by a parent, accompanied by additional pieces from a teacher, should—like a puzzle—result in a meaningful, interlocking whole. Unfortunately, this is not a common outcome. Indeed, one of the most consistent research findings related to assessment is that individuals who provide information seldom agree with one another about the type, scope, or cause of the difficulties (De Los Reyes et al., 2015; De Los Reyes & Kazdin, 2005; Hawley & Weisz, 2003). Parents disagree with children, mothers disagree with fathers, and teachers disagree with students.

Given the fact that few children and adolescents refer themselves for psychotherapy, it is hardly surprising that when they find themselves in the office of a mental health professional, they rarely agree with adult perceptions of themselves or their difficulties. We might hope that once more formal assessment takes place, some of the disagreements might be resolved. However, at this time, "there is no single measure or method of assessing psychopathology in children that provides a definitive or 'gold standard' to gauge which children are experiencing a given set of problems" (De Los Reyes & Kazdin, 2005, p. 483). These circumstances contribute to a pervasive clinical dilemma: *over three-quarters of parent–child–therapist triads fail to agree about a single target problem* (Hawley & Weisz, 2003). Disagreements must be acknowledged and addressed because failure to agree about the nature of the problems or the goals of treatment is likely to be associated with poor outcomes.

Both child and parent factors influencing lack of agreement have been investigated. It may be that problem behaviors are exhibited in one context (e.g., school), but not in another (e.g., home). Lack of agreement is *not* reliably associated with either child age or gender; and although there is some evidence that children and adolescents attempt to portray themselves and their adjustments in the most positive light, these data also are not always replicated (De Los Reyes et al., 2015; De Los Reyes & Kazdin, 2005). The Attribution Bias Context (ABC) model detailed by De Los Reyes and Kazdin hypothesizes that when considering current problems, parents generally focus more on child dispositions, whereas children focus more on external explanations. The type of disorder also plays a part. Better rates of agreement between parents and children, and between mothers and fathers, are documented for observable, externalizing problems (De Los Reyes & Kazdin, 2005).

It is important to acknowledge that children's and adolescents' views may be valid in the absence of agreement. For instance, adolescents' reports of their social anxiety are sometimes at odd with both parent reports and physiological measures. Even so, these adolescent reports were useful. Although they underreported their anxiety symptoms (compared to their parents), adolescent reports were positively associated with clinical status (referral for treatment) (De Los Reyes et al., 2012). Clinicians tend to agree with parents more often than with children or adolescents (De Los Reyes & Kazdin, 2005; Hawley & Weisz, 2003). Even so, they must actively reconcile conflicting information, perspectives, and motives. This reconciliation must occur during the initial phases of the assessment and treatment process in order to facilitate engagement and cooperation from all participants. In fact, recent research suggests that differing perspectives are common, not only at the beginning of treatment but also across the entire treatment. Child, parent, and therapist perspectives on the development and strength of the therapeutic alliance (i.e., the positive working relationship) are often at odds. In this study, although alliances were rated as high quality overall, children and caregivers reported stronger and more constant alliances than did therapists (Accurso & Garland, 2015).

working closely with various family members. There are many potential informants for interviews, with different perspectives and agendas. Each informant provides unique information (De Los Reyes et al., 2015; also see Box 4:2), even when the information varies somewhat from person to person.

Clinicians are interested in the areas of agreement among informants, as well as areas of disagreement; both kinds of information can be useful. Whenever possible, interviews are conducted with both parents. Parents are able to provide helpful data about their children and, in many cases, are the ones most likely to detect problems in their early stages. Parental and family characteristics, such as psychopathology and life events, are important to keep in mind, however, because these kinds of characteristics appear to affect their ratings of their children's functioning. Parents who struggle with their own mental illnesses or with economic hardship, for instance, have lower thresholds for identifying behavior as problematic (Youngstrom, Loeber, & Stouthamer-Loeber, 2000). And again, clinicians would do well to attend to both the parents' and families' strengths *and* limitations because they may have important implications for diagnosis and treatment. Keep in mind that, as with all health care relationships, children and parents "mostly want us to tell them what is wrong, what to do to suffer less, and to listen and speak with kindness and respect" (March, 2009, p. 171).

Research suggests that mothers and fathers provide somewhat different data. Achenbach (2014, p. 72) explains that "the discrepancies between mothers' and fathers' rating of their children reflect real differences in aspects of children's functioning elicited, noticed, and reported by each parent, rather than parental 'biases' or errors." Accurate assessment of children also may need to take into account the cultural background of parents and families. Parents from certain cultures may be more sensitive to internalizing or externalizing kinds of problems in children (Achenbach, 2014).

Parents also may differ with respect to the levels of concern they display, with some parents more likely to believe that their children will improve over time (Weisz et al., 1988, 1991). As noted, some of the most important aspects of communication between mental health professionals and parents are to help them make sense of their situation and to keep them engaged with and supportive of their children. According to Yates, Burt, and Troy (2011, p. 256), the "developmental formulation paints a hopeful picture in which there is an enduring capacity for change and, even in the midst of extreme maladaptation, a shared humanity in which we are all more alike than we are different."

In the interview with Eden's parents, they emphasized that school is becoming increasingly stressful for both Eden and for them, with much more time spent closely monitoring assignments, homework, and teacher concerns. In addition, she has begun to complain about stomachaches and has missed school as a result. Her mother and father are particularly upset about the fact that Eden has lied to them about schoolwork because they have always felt that they could trust their daughter. Eden's parents also provided information about the extended family, noting that two of Eden's cousins have been diagnosed with ADHD. They believe that Eden does not display the increased activity or impulsiveness observed in these other children. In contrast to these recent difficulties, her parents report that she seemed relaxed and happy during the summer and enjoys playing with her younger sister and in community sports programs. When the focus is not on school, Eden can be very pleasant and can entertain herself for long periods of time by coloring and doing crafts.

David's parents noted that, in addition to seeming anxious, he is increasingly irritable at home, and angry and aggressive when frustrated. They described David as having a "short fuse" and as being both oppositional and inflexible. They also reported that the summer prior to this school year, he seemed to lose interest and enjoyment in his usual activities.

Rohan's mother reported that he had been a difficult infant, easily upset and difficult to comfort. His infancy was a challenging time for her because she was in the middle of ending an abusive relationship. She reported that by the age of 2, Rohan was consistently aggressive with others and seemed especially stressed in social situations. She talked about feeling very guilty about her current anger and resentment toward him. She said that although she does love him, she no longer expects to have a pleasant and easy time with him and is resigned to the belief that each day with him will be a struggle. She also acknowledged that she feels exhausted and impatient, and she despairs of finding any helpful way to deal with her son.

Interviews with children are also critical sources of information, although the types of interviews conducted with David, Eden, and Rohan are going to be very different. The format of child interviews ranges from structured play to highly planned sets of questions to open-ended conversations, and takes into account characteristics such as age and whether the child is comfortable interacting with a clinician apart from parents (Deighton, Croudace, Fonagy, Brown, Patalay, & Wolpert, 2014). Even the youngest children, with limited verbal skills, can be expected to provide unique assessment data through, for example, their behavioral and play patterns. As with parents, ethnicity and cultural background influences on children's self-reports must be taken into account (Vaughn-Coaxum, Mair, & Weisz, 2016). And, again, areas of agreement and disagreement between parents and their children provide an important perspective (see Box 4:2).

In the interview with nine-year-old Eden, she was subdued and reluctant to talk at first, but she was easily reassured and quickly became more open and communicative. Eden is very aware of her current school difficulties and said she thinks that she needs to try harder. She said that she tries to pay attention in class, but when she later tries to complete assignments at home, she has forgotten what the teacher talked about. She acknowledges that she has sometimes told her parents that she does not have homework because the work is too hard and she wants to have more free time at home. Eden was able to describe a number of activities that she enjoys, including time spent with a best friend, and talked excitedly about a planned trip with her family. She did describe having trouble falling asleep at night because she is worried about things such as upcoming tests and about someone breaking into the house. When this happens, she leaves her room and crawls into bed with her parents.

In the interview with 12-year-old David, he acknowledges that he does not like to go to school, which he describes as "mostly boring." He says that he used to do well in school but does not talk about his accomplishments with any sense of pride or joy. He disputes his parents' description of his behavior at home, saying that he would prefer to be left alone but that his parents are "always bugging me about everything" and that he gets upset. David said that he frequently worries that he will get sick in school and throw up in the classroom. This worry has led him to go to the school nurse almost every day and to resist going to school at all if he thinks he might be feeling ill. In response to questions about his interests, David said that he used to like playing baseball and practicing the piano. Now, however, he describes these as "boring and dumb" and has dropped both activities.

In the interview with 4½-year-old Rohan, he was briefly seen alone, and then with his mother. Rohan had no difficulty separating from his mother and played enthusiastically but impulsively with various toys in the office. He generally ignored the clinician and rebuffed attempts to engage in shared play activities. When joined by his mother, however, Rohan became somewhat more active, impulsive, and aggressive. At one point, he hit his mother with a toy car and laughed. Rohan's mother told him that he had hurt her, and that if he did it again, she would not allow him to watch television when they got home.

Assessment Technique: The Standardized Test

In addition to the rich information that can be gathered from interviews, data from standardized tests are almost always part of an assessment. **standardized tests** are assessments in which the data from a particular child can be compared to data gathered from large samples of children, including typically developing children and children with a variety of diagnoses. Results from standardized tests are often evaluated with respect to specific age and gender characteristics. That is, a result from a five-year-old girl is compared to the results of other girls of similar age, and a result from a 14-year-old boy is compared to the results of other adolescent boys. The most common standardized tests are rating scales, checklists, and basic questionnaires completed by parents, children, and adolescents. These are global measures of personality functioning and problem areas, such as the widely used Child Behavior Check List (CBCL), developed by Achenbach and colleagues, the Child and Adolescent Psychopathology Scale (CAPS), developed by Lahey and colleagues, and the Strengths and Difficulties Questionnaire (SDQ), developed by Goodman and colleagues.

Other common standardized tests include measures of general cognitive or intellectual functioning, such as the Wechsler Intelligence Scales for Children

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Psychological assessments of children often include standardized tests.

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or the Stanford-Binet. Neurological and neuropsychological evaluations are sometimes part of the standardized assessment plan. There are also tests that are domain specific, focusing on a particular disorder such as depression or anxiety. The Reynolds Child Depression Scale and the Reynolds Adolescent Depression Scale are examples of self-report tests that take the age of the child into account when asking particular types of questions and in phrasing the questions.

Other traditional measures of personality and clinical symptoms would include **projective measures** such as the Rorschach inkblots and the Thematic Apperception Test (TAT), a storytelling task. Projective measures are based on the assumption that, given an ambiguous stimulus, individuals' responses will reflect the *projection* of unconscious motivations, concerns, and conflicts. Although academic researchers frequently decry the continued use of projective measures, given the relatively poor data on their reliability and validity (Garb, Wood, Lilienfeld, & Nezworski, 2002), clinicians counter that these measures often allow us to engage children in ways that enable them to talk about difficult feelings or experiences indirectly, and in ways that are developmentally more familiar and appropriate.

Assessment Technique: Physiological Measures

Most assessments do not involve physiological measures. With increased attention to physiological functioning and neurobiological dimensions of disorder, however, there is new interest in physiological assessment. Concerns about cost, feasibility, and usefulness must be addressed before these kinds of assessments are routine (De Los Reyes & Aldao, 2015). In time, physiological measures may be important markers of both initial disorder and later improvement.

Assessment Technique: Observation

Another source of valuable information comes from **observations** made by the clinician. Clinicians usually observe children in clinical settings, such as offices, but also may observe children in everyday settings such as the home or school. These behavioral observations can provide specific sorts of contextual data, including analyses of what comes before, and what follows, a child's dysfunctional behavior. Observations may also be more encompassing. For example, a clinician might focus on evaluating children's relationships to determine whether the relationship is itself the cause of disorder, or how it plays a part in the maintenance of a child's disturbance.

A number of structured observations use an explicit developmental framework (Yates et al., 2011). For example, the Disruptive Behavior Diagnostic Observation Schedule (Wakschlag, Tolan, & Leventhal, 2010) is intended to distinguish the "terrible twos and threes" from more serious behavior difficulties in young children. As a developmentally informed assessment, it is designed to elicit atypical examples of problem behavior. Structured observations also address the context specificity of problem behaviors—that is, problem behaviors that appear in one context and not another, such as at home and not at preschool, or at preschool and not at home (Yates et al., 2011).

Because many of the initial concerns about children are related to school functioning, teachers and schools can be important sources of clinical data. In some cases, teachers complete parallel forms of parent questionnaires. Many times, teachers' information is consistent with that provided by parents and children; other times, different information becomes available. Teacher characteristics may influence the information provided about children. Both Sbarra and Pianta (2001) and Youngstrom, Loeber, and Stouthamer-Loeber (2000) report that teacher ratings of students can be influenced by the students' racial backgrounds, with black children rated as having more difficulties compared to similar white children. These rating differences may reflect bias, error, or a combination. Other differences in teacher ratings may be tied to actual differences in children's behaviors in various settings (at home versus in school). In addition to teacher ratings and school records, a large collection of possible tests is available, designed to examine many different aspects of ability and achievement, as well as to measure cognitive functions that might affect learning, such as inattention and memory.

Another perspective on the central roles of the school classroom, teachers, and school psychologists emphasizes the need to coordinate diagnoses of children using the DSM with the special education categories delineated in the **Individuals with Disabilities Education Improvement Act (IDEA)** of 2004 (Wodrich, Pfeiffer, & Landau, 2008). Because the special education categories are broad and the criteria are general, the students in any category have "decidedly heterogeneous problems and diverse educational needs" (p. 627). For example, children diagnosed with ADHD often improve with a combination of medication and classroom interventions; this information should be part of school-based planning. Another example of necessary coordination and planning involves the identification of children whose disorders place them at higher risk for poor outcomes and in greater need of limited school services

(Wodrich et al., 2008). Finally, from a developmental view, children's functioning in school (both academic and social) is a key marker of well-being. Understanding children's school adaptation or impairment is a necessary component of any comprehensive assessment.

Eden's Diagnostic Summary Eden's current difficulties are most consistent with a DSM-5 diagnosis of ADHD. The diagnosis of ADHD with a predominant clinical presentation of inattention is often made later in the elementary school years, when demands for organization and independent functioning in school begin to increase. Eden's academic achievement is generally consistent with her intellectual functioning, and there is no evidence that she responds poorly to instruction, so there is no strong case to be made for a learning disorder. Clearly, Eden is a somewhat anxious child, and the problems that she is experiencing in school have exacerbated this vulnerability. Although a case can be made for diagnosing an anxiety disorder as well, it may be most reasonable to monitor Eden's anxiety symptoms as the ADHD is addressed.

For Eden, the set of tests included the parent version of the CBCL; the teacher version of the CBCL; two self-report questionnaires, including the Depression Self-Rating Scale and the Children's Manifest Anxiety Scale; the Wechsler Intelligence Scale for Children; the Woodcock-Johnson III Tests of Achievement; and the Integrated Visual and Auditory Continuous Performance Test, which is designed to measure one's ability to inhibit response, remain vigilant, demonstrate consistency of attentional focus, and respond quickly.

David's Diagnostic Summary Taken together, the data provided suggest that David is experiencing both an anxiety disorder and a depressive disorder. His symptoms meet the DSM-5 criteria for both classification categories, both disorders contribute to current distress and dysfunction, and both disorders appear to require immediate intervention.

For David, a set of tests similar to Eden's was used. However, because there were no concerns about academic problems, the cognitive and attentional measures were not administered. Because the underlying emotional state was problematic, along with social adjustment, some projective techniques were used during the assessment. The Rorschach and the TAT provided additional ways to understand David's subjective experience of the world around him. In completing the self-report measures of emotional functioning, David denied most of the obvious symptoms of depression and anxiety, with the exception of anxiety related to being physically ill. Projective data (e.g., repeated sad and discouraging themes in David's TAT stories), however, suggested depressed mood, relative developmental immaturity, and a poor sense of self-efficacy. David's parents independently completed the CBCL. There were striking consistencies in their reports, with highly significant elevations on the three internalizing scales reflecting symptoms of social withdrawal, anxiety, and depression.

Rohan's Diagnostic Summary Although ADHD is a reasonable diagnosis given the clinical presentation, it is a difficult diagnosis to make confidently given Rohan's very young age, the high level of stress he and his mother have experienced, and their relative lack of social support. A diagnosis of oppositional defiant disorder was made as a way of capturing the most important concern at this time, which centers on Rohan's difficulty internalizing developmentally appropriate self-control and his mother's difficulty managing day-to-day routines and interactions with him.

For Rohan, age and presenting concerns influence a different selection of tests. Because of his age, Rohan did not complete any assessment measures himself. His mother completed the parent version of the CBCL. The resulting profile had extremely high scores on all the externalizing scales, indicating that aggression, impulsivity, and hyperactivity were all significant problems for Rohan. Because some of the initial concerns reflected a high level of discomfort in social situations and some other atypical behaviors and developmental patterns, the Children's Autism Rating Scale was completed by the psychologist. The score on this scale was not in the clinically significant range.

Intervention

Classification, assessment, and diagnosis are most practical when they provide information about what can be done to help distressed children. This section provides a general introduction to the topic of interventions for children and adolescents, with an emphasis on the progress that has already been made, as well as the potential that has yet to be fully achieved (Fonagy et al., 2015; March, 2009; Shonkoff & Fisher, 2013). The basic notion that age-related norms and expectations must be taken into account when designing any intervention strategy is a key contribution from the developmental psychopathology framework. This framework informs decisions about whether and when to intervene, the goals of intervention, and simple versus more complex treatments and techniques (Ialongo et al., 2006; Masten & Cicchetti, 2010). The developmental perspective emphasizes the unique context of treatment for each child, taking into account factors that have contributed to the child's disorder, factors related to the network of peers and friends, factors related to the school setting, and cultural contributions. Interventions must include more effective use of translational research (described in Chapter 3). When effective treatments are available, we need to publicize that information and identify the best ways to "scale up" treatments to reach as many struggling children as possible (Forgatch, Patterson, & Gewirtz, 2013; Hoagwood et al., 2014; Shonkoff & Fisher, 2013). Nontraditional interventions, such as those provided by paraprofessionals and those delivered in new formats (e.g., internet-based ones) may become increasingly prevalent (Kazdin & Blasé, 2011). Regardless of the provider or format, ethical issues related to child and adolescent psychotherapy, including issues involving autonomy, confidentiality, protection, and communication (with parents, with teachers, and with other mental health professionals), must always be addressed.

The Efficacy of Psychotherapy for Children and Adolescents

Research on psychotherapy can be generally sorted by whether it is focused on outcome or process. **Outcome research** has to do with whether children and adolescents have improved at the end of treatment relative to their pretreatment status and compared to others who have not received treatment. Results of numerous meta-analytic studies confirm that psychotherapy works, with statistically significant and clinically meaningful effects for infants, toddlers, children, and adolescents (Shonkoff & Fisher, 2013; Weisz & Kazdin, 2010; Zeanah, 2009). Therapies that focus on helping children by working with their parents and families also have received a great deal of research support (Weisz & Kazdin, 2010; Zeanah, 2009).

It is important to understand that not all children who receive or participate in a research-based intervention improve in the same ways (or improve at all) (Rutter & Pickles, 2016). We need to pay more attention to the persistent disparities in outcomes for children who come from backgrounds that include poverty, poor education, and families that experience numerous, significant adversities (Shonkoff & Fisher, 2013) and for children from low- and middle-income countries (Wuermli, Tubbs, Petersen, & Aber, 2015). We also need to account for differences in outcomes in research studies versus real-world settings (Santucci, Thomassin, Petrovic, & Weisz, 2015; Yates et al., 2011).

Process research deals with the specific mechanisms and common factors that account for therapeutic change. Process-related discussions have focused on shifts from a one-size-fits-all model of treatment to models that emphasize specific pairings (or matching) of disorders and treatments (Chorpita & Daleiden, 2009; Chorpita, Bernstein, & Daleiden, 2011). Beyond matching disorders and treatments, researchers and clinicians look forward to the design of individualized interventions that address each child's particular set of difficulties. New data on the neuroscience of psychological treatments provide evidence that a better understanding of the connections between physiological and psychological functioning leads to more focused, more effective interventions (Barlow, 2014).

Michael Newman/PhotoEdit

In order to be effective, therapeutic interventions must reflect developmentally appropriate norms and expectations.

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A specific example of process research involves the examination of the mechanisms by which Fast Track, a comprehensive intervention focused on high-risk, aggressive first-graders, prevented negative outcomes in adolescence and early adulthood. Researchers described the ways in which improvements in certain domains of functioning (e.g., academic skills, socioemotional skills) had specific impacts on some outcomes but not on others (e.g., criminal behavior, mental health status) (Sorensen, Dodge, & The Conduct Problems Prevention Group, 2016).

Primary, Secondary, and Tertiary Interventions

An intervention can be characterized in a variety of ways based on the target (child, parent, or school) or the timing of the intervention. Differences in primary, secondary, and tertiary interventions are related to timing. **Primary prevention** involves reducing or eliminating risks, as well as reducing the incidence of disorder in children (McLaughlin, 2014; see Figure 4:2).

Following Gordon's (1983, 1987) work, Fonagy (1998) distinguishes three types of preventive measures: (1) **universal preventive measures**, which are provided for entire populations (e.g., mandatory immunizations for children); (2) **selective preventive measures**, provided for groups at above-average risk (e.g., Head Start programs for preschoolers from disadvantaged backgrounds); and (3) **indicated preventive measures**, provided for groups with specific risk factors that include more extensive interventions (e.g., packages of services for families with prematurely born infants). Primary interventions that begin early, last longer, and are more intensive are more likely to be effective. Examples of primary prevention efforts include nutrition education and supplementation for infants and their caregivers (Wachs, Georgieff, Cusick, & McEwen, 2014) and after-school programs for young adolescents that focus on strengthening ethnic identity, social support, and prosocial activities (Zimmerman et al., 2013).

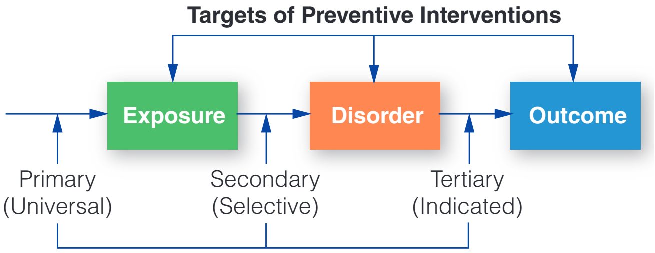

FIGURE 4:2 Targets of primary, secondary, and tertiary interventions.

(From McLaughlin, 2014, p. 89)

Secondary prevention has to do with interventions that are implemented following the early signs of distress and dysfunction, before the disorder is clearly established in the child. One example of this kind of prevention involves identifying children who, with their caregivers, are exposed to *adverse childhood experiences (ACEs)* (http://www.cdc.gov/violenceprevention/acestudy/index.html). As noted previously in Chapter 3, children who are exposed to multiple risks are much more likely to struggle than children who experience fewer risks. With this in mind, health and mental health professionals are working to identify children in pediatricians' offices, schools, and community settings so that referrals can be made and treatments can be offered before children's safety and well-being are further compromised. **Tertiary prevention** has to do with responding to already present and clinically significant disorders. The goals of secondary and tertiary prevention include restoring healthy functioning and minimizing future impairments. Most of what clinicians do when working with children and adolescents involves secondary and tertiary prevention. As with primary prevention, abundant research and clinical data suggest that these are effective interventions.

Working with Children

Several key influences on current services for children can be identified, including the mental hygiene movement of the early 20th century, primarily related to concerns about the poor treatment of adults in state mental hospitals; child guidance clinics, focused on the reform and rehabilitation of juvenile offenders; and the emergence of psychoanalysis, emphasizing the etiology of psychopathology during childhood (Weisz, Sandler, Durlak, & Anton, 2005). Noteworthy recent trends include the strengthening of connections between research and clinical practice, pharmacological interventions for children, the impact of policies such as mental health parity in insurance coverage, and intervention guidelines that emphasize short-term and evidence-based therapies (Fonagy et al., 2015; Weisz & Kazdin, 2010).

Working with Parents and Families

Different parents require different helping strategies (Hoagwood et al., 2009). Given that research shows, repeatedly and emphatically, that caregiver involvement and nurturing relationships are the key to children's well-being, addressing the needs of parents so that they can provide appropriate care is essential (Shonkoff &

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Fisher, 2013). Family support might include education and instruction, emotional support, and/or advocacy information. Parents may require assistance to deal with their own adversities, both personal, such as trauma and mental illness, or environmental, such as unemployment and domestic violence (Shonkoff & Fisher, 2013). For all parents, the overall goals are similar: to help caregivers create and provide environments conducive to children's physical, emotional, intellectual, and social growth. Note that recent research suggests that most individuals prefer psychological interventions to pharmacological ones (McHugh, Whitton, Peckham, Welge, & Otto, 2013); this preference is confirmed when parents are asked about treatments for their children (Lewin, McGuire, Murphy, & Storch, 2014).

Because parents are usually responsible for recognizing the need for intervention and following through on intervention efforts, factors that influence recognition and help-seeking are important (Thurston, Phares, Coates, & Bogart, 2015). Numerous actual and perceived barriers to treatment, such as economic hardship, the belief that therapy is irrelevant, or the therapist blaming the parent for the child's difficulties, are related to not seeking treatment and/or dropping out of treatment (Farmer, Burns, Phillips, Angold, & Costello, 2003; Owens et al., 2002). With respect to interventions based primarily on working with parents (in order to enhance children's well-being), large-scale studies emphasize the need for easy access to empirically supported treatments, with support and follow-up to maximize positive impacts (Forgatch et al., 2013; Olin, Hemmelgarn, Madenwald, & Hoagwood, 2015; Sandler, Ingram, Wolchik, Tein, & Winslow, 2015).

Working with Schools and Communities

Acknowledgment of widespread need and disparities in children's developmental outcomes has influenced the expansion of mental health programs in schools and communities (Roeser & Eccles, 2014; Weist et al., 2014). Because teachers frequently refer children and adolescents for assessment and treatment, and because difficulties are often displayed in the school setting, it makes sense that many interventions take place in schools, with the cooperation of school personnel and parents. For these interventions to be successful, it is important for mental health professionals to pay attention to the ecological context of schools and the central role of teachers (see Figure 4:3). Mental health professionals and child advocates also must be well versed in

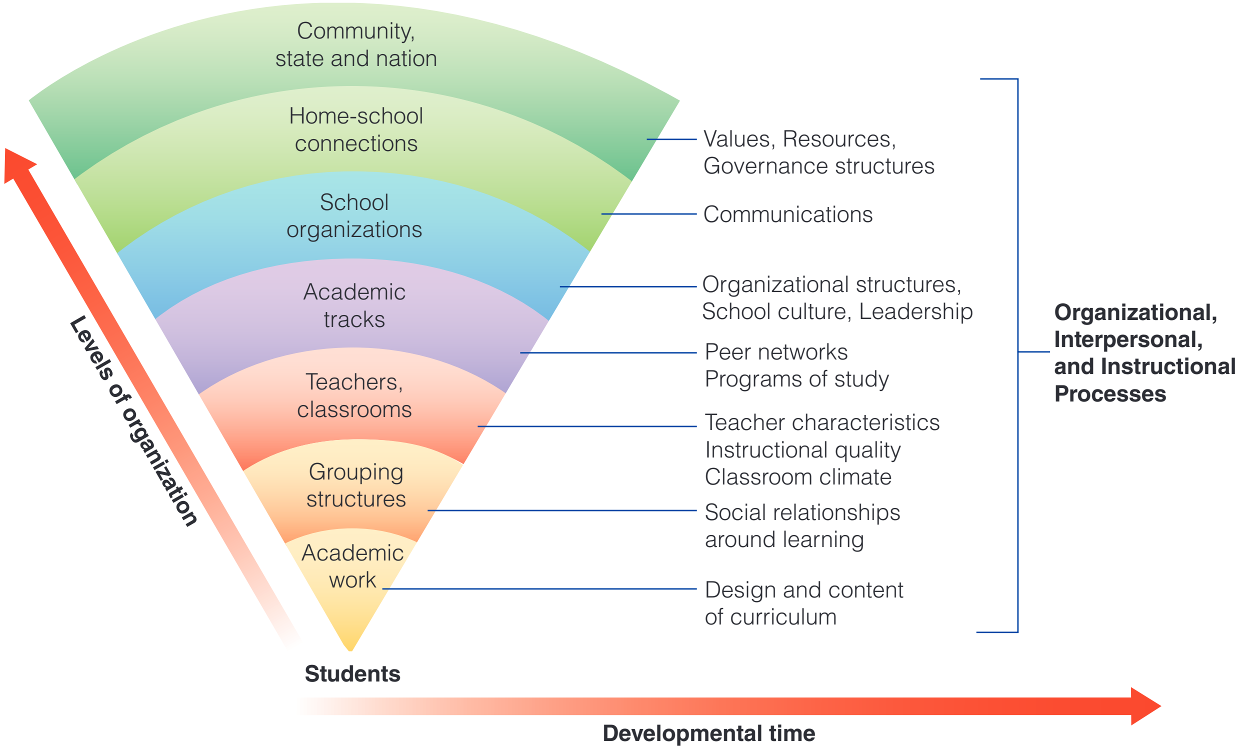
Community, state and nation
Home-school connections
School organizations
Academic tracks
Teachers, classrooms
Grouping structures
Academic work
Students
Levels of organization
Developmental time
Values, Resources, Governance structures
Communications
Organizational structures, School culture, Leadership
Peer networks Programs of study
Teacher characteristics Instructional quality Classroom climate
Social relationships around learning
Design and content of curriculum
Organizational, Interpersonal, and Instructional Processes

FIGURE 4:3 School as a sociocultural context of development: Structures and processes.

Source: Roeser, R.W. and Eccles, J.S. (2014). Lewis & Rudolph (Eds), "Schooling and the mental health of children and adolescents in the United States," in Handbook of Developmental Psychopathology, Springer.

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relevant legislation, including the many federal and state laws, regulations, and requirements related to access to school services for children with various kinds of disabilities. For example, therapists are often consulted by school personnel during the design of an Individualized Education Program (IEP), an education plan that is required for each public school child who is eligible for special education services.

School-based mental health services can include services designed to promote learning, services designed to mitigate the effects of adversity on brain development, or services designed to bridge high-risk "home and neighborhood ecologies" (Atkins, Hoagwood, Kutash, & Seidman, 2010; Atkins et al., 2015). It is important to note that interventions that target a few students may lead to classroom changes that benefit many students. Recent research documented the positive impact of individual psychological interventions with selected seventh graders on their classmates' achievements (Powers et al., 2016). Schools can also be the place where other kinds of interventions (e.g., family-based interventions) begin, such as the "Family Check-Up" intervention, aimed at engaging at-risk families in the middle school years in order to decrease rates of antisocial behavior and substance use (Stormshak et al., 2011). Community-centered approaches, such as the Carolina Abecedarian project, are often systemwide interventions targeting families, child care settings, schools, and communities (Campbell & Ramey, 2010). After-school and summer school programs, often located in recreational settings, are other examples of community intervention efforts, as are social safety net programs (Frazier, Chacko, Van Gessel, O'Boyle, & Pelham, 2011; Gassman-Pines & Hill, 2013). Two final, and most unfortunate, settings for child and adolescent interventions are found in child welfare and juvenile justice settings (Ungar, 2005a, 2005b). Overall, our consideration of clinical intervention efforts reflects our consideration of developmental principles and practices. The focus of intervention must be on developmentally salient tasks and issues, and it must focus on multiple levels of development—the child, the child as part of a family system, and the child in the context of school, community, and culture.

Key Terms

Classification (p. 48)
Diagnosis (p. 48)
Categorical classification (p. 49)
Diagnostic and Statistical Manual (DSM) (p. 49)
Reliability (p. 50)
Interrater reliability (p. 50)
Cross-time reliability (p. 50)
Validity (p. 50)
Internal validity (p. 50)
External validity (p. 50)
Externalizing dimension (p. 50)
Internalizing dimension (p. 50)
Heterogeneity (p. 53)
Comorbidity (p. 53)
Assessment (p. 54)
Differential diagnosis (p. 54)
Diagnostic efficiency (p. 54)
Interviews (p. 55)
Standardized tests (p. 58)
Projective measures (p. 59)
Observations (p. 59)
Individuals with Disabilities Education Improvement Act (IDEA) (p. 59)
Outcome research (p. 61)
Process research (p. 61)
Primary prevention (p. 62)
Universal preventive measures (p. 62)
Selective preventive measures (p. 62)
Indicated preventive measures (p. 62)
Secondary prevention (p. 62)
Tertiary prevention (p. 62)

Chapter Summary

- Diagnostic classification systems group individuals with similar patterns of disorder. Effective classification systems help organize symptom patterns into meaningful groups, facilitate communication among professionals, and inform research and treatment efforts.
- The most commonly used categorical (clinical) classification system with adults and children is the Diagnostic and Statistical Manual of the American Psychiatric Association (DSM-5, in its current

incarnation). This type of classification identifies types of disorders and then specifies the defining symptoms of the disorders.

- Dimensional (empirical) classification systems have been an especially useful way to consider the development of psychopathology. This approach is based on statistical techniques that identify key dimensions of children's functioning and dysfunction, with the assumption that all children can be meaningfully described along these dimensions.
- The two useful and well-researched clinical dimensions are the externalizing dimension, with undercontrolled behaviors such as oppositional or aggressive behaviors; and the internalizing dimension, with overcontrolled behaviors such as anxiety or depression.
- The integration of developmental perspectives with classification systems is an ongoing concern in the field of developmental psychopathology. A number of efforts emphasize the integration of information about typical development, age-salient challenges and expectations, and developmentally informed assessment and diagnosis.
- Comorbidity is the cooccurrence of two or more disorders in one individual. Systematic comorbidities reflect the fact that certain disorders are likely to occur together often (e.g., ADHD and oppositional defiant disorder).
- Psychological assessment involves the systematic collection of relevant information in order to differentiate everyday problems from psychopathology and to diagnose disorders accurately.
- Assessment methods, including interviews, standardized tests, projective measures, and observation, all contribute to a diagnosis; differential diagnosis is making a decision about which of several diagnoses best describes an individual.
- Research on psychotherapy generally focuses on either outcome or process. Outcome research has to do with whether, at the end of treatment, children and adolescents have improved relative to their pretreatment status and compared to others who have not received treatment. Process research has to do with the specific mechanisms and common factors that account for therapeutic change.
- Interventions can vary in their focus (child, parent, or school) and timing (primary, secondary, or tertiary), depending in part on whether they are designed to prevent or treat psychopathology.

5 Disorders of Early Childhood

CHAPTER OUTLINE

Developmental Tasks and Challenges Related to Physiological Functioning, Temperament, and Attachment

Physiological Functioning

Temperament

BOX 5:1 EMERGING SCIENCE: Differential Sensitivity: Interactions among Genes, Temperament, and Parenting

Attachment

Temperament, Attachment, and Psychopathology

Disorders of Early Development

Avoidant/Restrictive Food Intake Disorder

The Case of Jalen

The Case of Grace

Developmental Course

Etiology

Assessment and Diagnosis

Intervention

Sleep–Wake Disorders

The Case of Maddie

Developmental Course

Etiology

Assessment and Diagnosis

Intervention

Disorders of Attachment

The Case of Andreas

The Case of Lily

Developmental Course

BOX 5:2 RISK AND RESILIENCE: Children in Romanian Orphanages: Risks, Interventions, and Outcomes

Etiology

Assessment and Diagnosis

Intervention

Prevention

Child Treatment

Infant–Parent Psychotherapy

CONTEMPORARY PERSPECTIVES ON THE mental health and psychopathology of very young children are influenced by the pioneering work of many clinicians and researchers. Much of this work has focused on better understanding of temperament, attachment, and the centrality of the caregiving relationship in early development. With respect to temperament, current researchers build on the foundation provided by psychologists Mary Rothbart and Jerome Kagan, and the longitudinal studies of Alexander Thomas and Stella Chess (Thomas & Chess, 1977; Chess & Thomas, 1984). With respect to attachment, Rene Spitz's studies of institutionalized infants, John Bowlby's (1953, 1961) reviews of maternal deprivation and infant mourning, and Barbara Tizard's reports on children in residential nurseries (Tizard & Hodges, 1978; Tizard & Rees, 1975) contributed compelling data on disrupted or troubled parent–child relationships. In this chapter, we examine the earliest manifestations of adjustment and maladjustment. We also present evidence that certain early patterns of development are risk factors for many different kinds of later psychopathology.

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Developmental Tasks and Challenges Related to Physiological Functioning, Temperament, and Attachment

Physiological Functioning

From birth onward, infants interact with their personal and material worlds in ways that promote physical, emotional, intellectual, and social development. This growth is marked by three *biobehavioral shifts* that signal important intrapersonal and interpersonal changes (Emde, 1985). The first of these biobehavioral shifts occurs between two and three months of age, after infants and caregivers have negotiated the transition from intrauterine to extrauterine experience via rhythmic routines of feeding, dressing, and comforting (Hofacker & Papoušek, 1998). Later in the first year, between seven and nine months, another shift takes place. By this time, most babies communicate their feelings and intentions through gestures and vocalizations, play with toys, and have a number of daily and nightly schedules. The third shift occurs between 18 and 20 months. By then, toddlers are walking and talking and are increasingly independent explorers of their many environments. These accomplishments—involving new, challenging, and sometimes stressful events—are no less astounding because they are common outcomes. Indeed, these achievements reflect the remarkable capacities of the typical newborn.

One physiological system that undergoes dramatic change over the early months and years of life is the sleep–wake system. The sleep–wake system is tied to brain maturation, organization, and function (El-Sheikh & Sadeh, 2015), and the child's consolidation of sleep into the nighttime hours is a much-anticipated event by parents. High-quality sleep (i.e., enough sleep and restorative sleep) is associated with emotion processing, cognitive development, and behavior regulation, as well as with adjustment and well-being across the lifespan (Goldstein & Walker, 2014; Kelly & El-Sheikh, 2014; McGlinchey & Harvey, 2014). Parents, of course, play the key role in structuring and supporting infant and child sleep. Sociocultural factors such as beliefs about sleep and preferences for children sleeping together or apart from parents also influence the development of sleeping patterns (El-Sheikh & Sadeh, 2015; Super & Harkness, 2013).

Temperament

Many researchers and clinicians have spent decades working to meaningfully describe the variations in newborns' styles of attention, activity, and distress that underlie the construct of **temperament**. The definition of temperament that will be used throughout the text is provided by Shiner (2015, p. 86): "Temperament traits are early-emerging basic dispositions in the domains of activity, affectivity, attention, and self-regulation, and these dispositions are the product of complex interactions among genetic, biological, and environmental factors across time."

Much of the research to date on temperament has focused on two broad dimensions. **Reactivity** involves the infant's excitability and responsiveness. For instance, some infants may become quite agitated while being passed from relative to relative during a family reunion. Other infants may accept strangers' kisses, hugs, and peekaboo games in stride. **Regulation** involves what the infant does to control his or her reactivity. Some distressed infants seek and receive comfort from a parent and quickly settle down; others may wail and thrash about and take a much longer time to recover. Both reactivity and regulation are influenced by physiological factors. For example, negative reactivity (including fearful emotions and fearful behaviors) is associated with hyperresponsive amygdala activity, in the context of overall high levels of arousal in the sympathetic nervous system. Individual differences in neurotransmitter functioning (in the serotonin and dopamine systems) also influence early and ongoing temperament reactivity (White, Lamm, Helfinstein, & Fox, 2012). The physiological basis of regulation is associated with activity in the anterior cingulate cortex and the lateral prefrontal cortex—two brain regions that undergo significant maturation across development. One example of this maturation involves enhanced brain connectivity (White et al., 2012). Reactivity and regulation are not experienced in isolation from one another; there is a constant back-and-forth as children engage with others and the environment (see Figure 5:1).

Moving beyond descriptions of reactivity and regulation, researchers have described several temperament traits that reflect the combined influence of genetics, physiology, and the maturation and increasing coordination of physiological and psychological systems (Bates, Schermerhorn, & Goodnight, 2010; White et al., 2012). These temperament traits include *surgency* (i.e., sociability and positive emotionality), *negative affectivity* (i.e., predispositions to experience fear and frustration/anger), and *effortful control* (i.e., infant attempts to regulate

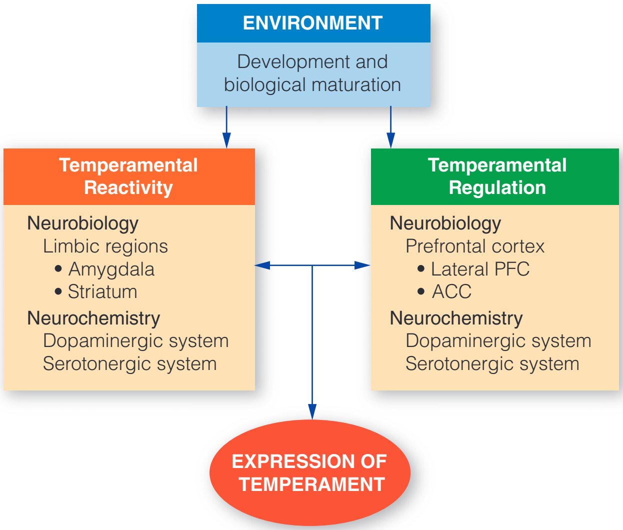

FIGURE 5:1 An illustration of the factors that contribute to child temperament. From White, Lamm, Helfinstein, & Fox (2012).

stimulation and response). Differences in effortful control are frequently discussed in the context of arousal and emotion (Lengua & Wachs, 2012). Arousal is an adaptive phenomenon, alerting individuals to potential threats as well as potential rewards. But some infants and children experience too much arousal, or too frequent arousal, or arousal without purpose; much of this arousal is connected to experiences of fear and anger. Although negative emotions are central to the construct of temperament, we cannot overlook the part that positive emotions play. Well-adjusted children have access to the full range of positive *and* negative emotions, as well as mild, moderate, and strong intensities of experience. Developmental psychopathologists emphasize the variety of normal positive and negative emotional responses and the "strong, self-righting properties of the healthy newborn" (Gunnar, Porter, Wolf, & Rigatuso, 1995, p. 1).

Even as temperament researchers focus on the role of biology–behavior links in young children, there is also a place for nurture (parents and families) in almost all temperament models. The most important dimensions of parenting, in terms of impact on infant temperament, are *warmth* (connected to the child's needs for affection, soothing, protection, belonging, learning, and efficacy) and *positive and negative control* (connected to the child's needs for autonomy and self-regulation) (Bates, Schermerhorn, & Petersen, 2014). The influence of the caregiver on measures of both infant reactivity and infant regulation is frequently observed. With respect to reactivity, there is evidence that sensitive caregiving, in both everyday and adverse circumstances, is associated with positive changes in infants' stress-reactive hormones (White et al., 2012). Sensitive caregiving includes a variety of parenting behaviors that support and promote development. One example of such caregiving involves how parents respond to and support infants with temperament traits that are associated with poor sleep quality (De Marcas, Soffer-Dudek, Dollberg, Bar-Haim, & Sadeh, 2015). Less sensitive parenting is correlated with ongoing negative affectivity (Blandon, Calkins, Keane, & O'Brien, 2010; Lipscomb et al., 2011).

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Temperamental characteristics, such as negative affectivity, are significant factors in later child and adult personality.

Caregivers also influence regulation, including the ways that infants depend on active regulation by others and the ways that caregivers support infants' own attempts at self-regulation (Bates & Pettit, 2007). Caregivers regulate their infants by responding to their signals of discomfort, such as changing wet diapers or rocking tired babies to sleep. Mothers and fathers help babies by providing shoulders to cry on, blankets to cuddle in, and soothing lullabies at bedtime. In each of these instances, infants, caregivers, and their relationships benefit from successful regulation. In contrast, some parents may exhibit more frequent overcontrolling or intrusive behavior. Over time, these behaviors may have a negative impact on children's own effortful control (Graziano, Keane, & Calkins, 2010).

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Goodness of fit refers to the complementary relationship between infant temperament and parenting.

Thomas and Chess (1977) and Chess and Thomas (1984) describe *goodness of fit* as the interplay between infant temperament and parenting. Some of the more frequently mentioned combinations include well-matched pairs (e.g., easygoing babies with easygoing parents and exuberant babies with exuberant parents), and less well matched pairs (e.g., easygoing babies with exuberant parents and exuberant babies with easygoing parents). It is important to understand that the goodness of fit between infants and their caregivers is not an all-or-nothing situation. For any infant–caregiver pair, there are both matches and mismatches, with some mismatches associated with growth and the broadening of the infant's set of experiences (Stern, 1985). For example, a parent might offer an encouraging smile to a wary baby as she struggles to approach a lamb at the petting zoo. Indeed, according to Bates et al. (2010, p. 229), children who are high in negative affectivity are likely to "benefit from being at least moderately challenged by their parents, perhaps because well-managed exposure to stress helps such children to develop effective emotion-regulation skills." More problematic are infant–caregiver pairs with more numerous or more extreme mismatches (Seifer & Dickstein, 2000). For instance, we expect frequent or ongoing conflict to occur if a very gregarious parent is regularly insisting that a behaviorally inhibited child approach unfamiliar children and adults with enthusiasm.

When discussing goodness of fit, "difficult" temperaments are often highlighted, with descriptions of babies who are quickly aroused, emotionally intense, and hard to soothe. The assumption is that temperamentally difficult, demanding babies are challenging for any kind of parent, and that is almost certainly so (Ganiban, Ulbricht, Saudino, Reiss, & Neiderhiser, 2011; Williford, Calkins, & Keane, 2007). Infants with difficult temperaments, for example, influence trajectories of parenting over time, with a variety of outcomes. Recent investigations of temperament characteristics have emphasized **differential sensitivity**; that is, "the hypothesis that some individuals are more susceptible than others to both negative (risk-promoting) and positive (development-enhancing) environmental conditions" (Ellis, Boyce, Belsky, Bakermans-Kranenburg, & van IJzendoorn, 2011, p. 7; also see Box 5:1).

In a recent review of quantitative and molecular genetic studies, researchers emphasized that both genes and environments contribute to the development of temperament traits, with genes switching on and off in the presence of particular environments (Saudino & Wang, 2012). Shared environmental factors did not appear to have much impact: "Growing up in the same family does not make family members resemble each other in temperaments" (p. 319). Instead, there were substantial nonshared family effects, underscoring the need for researchers to look for child differences within (rather than across) families.

Research on gender and temperament is plentiful. Data suggest that boys are more likely to score higher on scales measuring surgency, whereas girls score higher on measures of effortful control; there are few differences related to negative affectivity (Else-Quest, 2012; Gagne, Miller, &

BOX 5:1

EMERGING SCIENCE

Differential Sensitivity: Interactions among Genes, Temperament, and Parenting

Child development can only be meaningfully understood in context. Indeed, healthy development depends on a nurturing environment (Pluess, 2015). In considering children's development in the context of environmental influences, we have understood for some time that individual differences, including those that are based on genetics, interact with social and physical environments in meaningful ways. Multiple studies over many years have revealed how these interactions result in varied outcomes, including both adaptive and maladaptive functioning. The *diathesis–stress model* was an early and highly influential approach to understanding how specific risks for psychopathology interacted with environmental stressors to trigger the onset of various disorders. The diathesis–stress model emphasized that heightened risk may lead to disorders in the context of a highly stressful environment, but that same level of risk might not lead to disorder under less stressful conditions. Diathesis–stress research has contributed to a rich and enlightening literature on the origins and development of psychological disorders such as schizophrenia, depression, and anxiety.

In recent years, researchers have taken the basic premise of this diathesis–stress model—that genetic profile and other biological factors interact with environmental influences to produce individual differences—and extended it. Rooted in developmental and evolutionary theory, *differential sensitivity* (also called *differential susceptibility* or *biological sensitivity to context*) asserts that although it is true that some children are differentially vulnerable to stressful environments, it is also true that these same children thrive in a differentiated way with developmentally appropriate and encouraging environments (Ellis, Boyce, Belsky, Bakermans-Kranenburg, & van IJzendoorn, 2011). At its heart, differential sensitivity maintains that children are, at a genetic and biological level, differentially susceptible to adverse conditions as well as responsive to supportive conditions (Pluess, 2015). A number of specific genetic markers that influence neurotransmitter systems (including serotonin and dopamine) are hypothesized to underlie differential sensitivity.

A frequently used metaphor helps illustrate the construct of differential sensitivity. Many children do well in a variety of circumstances, ranging from nurturing, positive environments to much more stressful and challenging environments. These individuals are referred to as *dandelion children*. Other children, known as *orchid children*, seem to be especially reactive and compromised in challenging settings. At the same time, however, growing up in an enriched environment may be especially valuable for the orchid child, who flourishes under such conditions (Boyce, 2012).

In the differential sensitivity model, having a difficult temperament is not necessarily viewed as a negative characteristic, but rather as a marker of the potential to be influenced by a "for-better-and-for-worse pattern of parenting effects" (Belsky & Pluess, 2009, p. 889). In other words, better-quality parenting predicts fewer problems (and poorer-quality parenting predicts more problems) for children with difficult temperaments. The strength of these effects diminishes for children with intermediate levels of difficult temperament and is weaker still for children with easy temperaments (Belsky & Pluess, 2009). Evidence from a range of studies has extended these findings, demonstrating that temperamentally difficult infants were differentially susceptible to the effects of early parental sensitivity, both positively and negatively, across developmental periods. This is seen, for example, in teacher-reported ratings of classroom behavior in the early school years (Roisman et al., 2012). Recently, researchers have begun to consider how these varied genotypes relate to more broadly to psychopathology and treatment efficacy. For instance, much stronger intervention effects are found for individuals with the genotype that confers high environmental sensitivity than for individuals with low-sensitivity genotypes (Bakermans-Kranenburg & van IJzendoorn, 2015). Additional examples of differential sensitivity research will be provided in upcoming chapters.

Goldsmith, 2013). Research on culture and temperament is less plentiful, although there are data suggesting some differences in Eastern versus Western cultures and among various Western cultures (Chen, Yang, & Fu, 2012).

Understanding temperament in young children is the first step toward understanding the development of personality. Thinking about how surgency, negative affectivity, and effortful control map onto later personality characteristics may provide important information about children's risk and resilience over time (Bates et al., 2010; Shiner, 2015; also see Table 5:1).

Given connections between temperament and personality, we expect to see evidence of temperamental *consistency* across a variety of situations and *stability* across time.

TABLE 5:1 **Temperament and Personality Characteristics over Time**

BIG FIVE DIMENSION	CHILDHOOD	ADOLESCENCE	ADULTHOOD
Extraversion	Increases over the first year, and then decreases from early to middle childhood.	Social dominance increases and shyness decreases; other aspects of extraversion show stability.	Mixed findings, but in general, extraversion decreases over the course of adulthood.
Negative emotionality and neuroticism	Negative emotionality decreases.	Mixed findings.	Neuroticism decreases beginning in late adolescence/ early adulthood.
Agreeableness	—	Stable over adolescence.	Increases across adulthood.
Effortful control and conscientiousness	Effortful control increases.	Mixed findings for conscientiousness.	Conscientiousness increases across adulthood.
Openness to experience	—	Mixed findings.	Increases in early adulthood, and decreases in later adulthood.

Source: From Bates et al. (2010)

And this is what we find: Temperament traits are consistently displayed and progressively more stable over development, with moderate stability by preschool and increasing stability over childhood. Although stability is evident, change is also observed. For most children, for example, dramatic increases in self-regulation occur across childhood and adolescence (Bornstein et al., 2015; Rothbart, 2007).

Attachment

We know that there are all kinds of babies. Affable, cuddly babies. Cranky, demanding babies. Babies who are into everything. Babies who are content to observe. For all these babies, there are also many kinds of caregivers and many kinds of caregiving relationships. By the end of the first year, most infants—together with their caregivers—have accomplished several key tasks and challenges. These include the development of an attachment relationship, a rudimentary sense of self, and a basic understanding of others and the world. *Attachment relationships* reflect the degree to which infants experience safety, comfort, and affection. *Sense of self* comprises the earliest set of cognitions and emotions focused on the infant as a separate being (e.g., Who am I? Am I likeable? Am I good?). *Understanding of others and the world* includes early beliefs about unfamiliar adults and children, along with the new situations in which infants so often find themselves.

Most infants thrive in homes that provide for their needs and desires in ways that are mostly sensitive, reasonably consistent, and usually warm. Over time, most infants come to understand, in a fundamental way, that they will be cared for, that they are worthy of care, and that the world around them is a pleasant place with interesting people, objects, and activities. This understanding—experienced and expressed emotionally, cognitively, and behaviorally—is the basis of attachment. According to attachment theorists (Ainsworth, 1969, 1979; Bowlby, 1982; Main, Kaplan, & Cassidy, 1985; Sroufe & Waters, 1977), the development of an attachment relationship is the significant psychological achievement of late infancy.

The most critical advantage of attachment, from an evolutionary perspective, is to ensure the protection and the survival of the infant (Bowlby, 1982). Protection and survival are linked to several defining features of caregivers: (1) providing a *safe haven*, a person to whom the infant can turn to for comfort and support; (2) allowing for *proximity maintenance*, for an infant who seeks closeness and resists separation; and (3) establishing a *secure base*, a person whose presence serves as a source of security from which a child ventures out to explore the world and to which he or she can reliably return.

In their daily interactions with caregivers, infants and toddlers share a variety of positive and negative experiences and exchange relevant emotions, actions, and appraisals (e.g., moving closer to a parent for comfort during a thunderstorm). Infants and toddlers also balance their wishes to explore with their ongoing concerns for maintaining interpersonal connections. For example, very young children may play with other children and toys in an unfamiliar home so long as a parent is nearby. When a parent moves farther away or leaves the room, keeping the parent within view or reestablishing closeness may become more important than exploration. In more challenging or stressful circumstances, such as the birth of a sibling, a difficult illness, or parental stress after losing a job, attachments provide a deeply rooted sense of safety and security. Although a young child may struggle (and struggle mightily) with adults who fuss over a new brother or sister, with painful medical procedures, or with a move to a different apartment, attachment relationships are instrumental in terms of children's abilities to keep hold of feelings of worth and love.

Whereas the normative processes of attachment can be described as they unfold over months of caregiving (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1982), there are also distinctive patterns in the attachments of particular children. Individual differences emerge from particular caregiving and relationship histories that become internalized early in development; similar patterns are observed in all countries and cultures (Posada et al., 2013). Caregiver sensitivity, availability, and responsiveness—or insensitivity, unavailability, or unpredictability—contribute to infants' and toddlers' emotionally salient beliefs and expectations related to self ("I am worthy/not worthy of care," "I am/am not lovable"), significant others ("I can/cannot trust that you will respond to me in appropriate ways"), and the world ("The world is/is not safe and pleasant"). These patterns of attachment can be broadly characterized as *secure* or *insecure*.

Patterns of secure attachment, in general, reflect caregiving histories in which the caregiver responds sensitively, consistently, and appropriately to an infant's physical, emotional, and social needs. In contrast, patterns of insecure attachment develop over time as a result of inconsistent, inadequate, or unavailable care, with such caregiver inadequacies sometimes interacting with difficult infant characteristics and/or environmental stressors. Patterns of infant insecurity are usually interpreted in terms of resistant, avoidant, and disorganized attachments.

Resistant attachment (or **anxious/ambivalent attachment**) is generally related to inconsistency or unpredictability. Mothers may respond to an infant's signals for affection on some days and not others. Fathers may feed a hungry baby at certain times and misread the discomfort of hunger at other times. Fears may be sensitively addressed or they may be ignored. These types of on-again, off-again caregiving environments are confusing and frustrating. Depending on the kind and the degree of inconsistent care, very young children with resistant attachments often appear unsure and anxious about themselves, their caregivers, and their situations. These children may or may not feel comfortable enough to explore a new playground. These children may or may not settle down with a familiar babysitter when mom runs a few errands. And these children may or may not happily reconnect with mom when she returns.

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Although specific child-rearing practices may vary across cultures, the importance of a secure attachment relationship to healthy psychological development is universal.

Avoidant attachment (or **anxious/avoidant attachment**) is generally related to inadequate care. Caregivers who are less competent or overwhelmed or resentful may repeatedly fail to protect or nurture their children. In addition, intrusive, excessively controlling care may influence the development of an avoidant attachment. With inadequate care, very young children appear emotionally constricted and distant, with a sense of themselves as being less worthy of care and concern. Individuals in the child's immediate and wider social settings may be perceived as unfriendly and not especially responsive. With intrusive care, children may avoid overstimulating interactions, blunt their emotional displays, attempt to care for themselves, and look to persons other than their caregivers for play and comfort.

Disorganized attachment signals a pattern of care in which the caregiver is perceived as frightening, frightened, or malicious (Hesse & Main, 2006). Solomon and George (1999a, 1999b) report that this pattern also may be observed in young children who have experienced long or repeated separations from a caregiver. There are instances, however, where disorganized attachment has been identified in the presence of sensitive parenting (Hesse & Main, 2006; Rutter, Kreppner, & Sonuga-Barke, 2009). With disorganized attachment, the attachment conflict is centered on the caregiver, who is experienced as both a source of comfort and a source of anxiety. Unable to resolve the conflict, the child displays—especially in times of stress—behaviors and emotions that are disorganized with regard to establishing or maintaining a sense of safety or security. The absence or breakdown of a set of attention, emotion, and behavioral strategies is reflected in undirected or misdirected behaviors, behavioral "freezing" or stereotyped movements, and/or expressions of fear and apprehension (Hesse & Main, 2006). A number of researchers have suggested that the pattern of disorganization is more reflective of dysregulation than insecurity (Rutter et al., 2009).

Numerous factors have been identified that influence the kind of care that infants receive. Parental sensitivity is usually viewed as the single most important factor (Bakermans-Kranenburg & van IJzendoorn, 2007; Raby, Roisman, Fraley, & Simpson, 2015). Other parental factors receiving theoretical and empirical attention include emotional availability, emotional security in the interparental relationship, the attachment histories of the parents, and the parents' psychological well-being and/or psychopathology. Genetic factors have also been investigated, with findings supporting the differential sensitivity hypothesis (see Box 5:1). That is, more negative outcomes have been observed for especially sensitive children in unfavorable environments, and more positive outcomes for especially sensitive children in favorable environments (Bakermans-Kranenburg & van IJzendoorn, 2007; Barry, Kochanska, & Philibert, 2008). A different pattern of genetic effects has been hypothesized for disorganized attachment (Rutter et al., 2009).

Attachment is a critical challenge and meaningful achievement for several reasons. First, early attachment processes are bound up with early neurological and physiological development, with evidence supporting brain and behavioral synchrony (Feldman, 2015; Gillath, 2015). Of particular note is attachment's influence on infant responses to stress (Cassidy, Jones, & Shaver, 2013). Second, the attachment relationship influences the emergence and organization of emotion regulation and highlights the central role of emotion in early personality development (DeKlyen & Greenberg, 2008; Sroufe, 1995). Third, the attachment relationship provides a relationship prototype, as well as a way to model how to behave in relationships (Sroufe, Coffino, & Carlson, 2010). Finally, early attachment is linked to later positive socioemotional outcomes, including empathy and compassion; there are also numerous links to later health outcomes (Cassidy et al., 2013; Robles & Kane, 2014).

Although stability and coherence over time in attachment-related emotions, cognitions, and behaviors is expected, there is also real possibility for change (from secure to insecure, or vice versa). Changes in parental expectations or behaviors and/or changes in social support for the caregiver are associated with changes in infants' attachment classifications (Sroufe et al., 2010). The opportunity for transformations in attachment is also noteworthy in adolescence, when cognitive, emotional, and behavioral developments provide opportunities for reflection and change (Fearon et al., 2014).

Temperament, Attachment, and Psychopathology

For some infants and children, temperament traits and attachment patterns are not the source of interesting variations in personality, but are the roots of later child and adult psychopathology. As discussed in Chapter 3, *risk* is conceptualized as one or more factors that make it more likely that a child will develop or experience psychopathology. Much of the work on temperament as a risk factor has focused on children with difficult temperaments and problems with either underregulation or overregulation, as well as the specific combination of high negative affectivity and low effortful control (Bates et al., 2014; Cole & Deater-Deckard, 2009). This high negative affectivity/low effortful control combination has been associated with numerous externalizing disorders in both the United States and China (Zhou, Lengua, & Wang, 2009). Temperamental exuberance is associated with both risk taking and positive social outcomes (Lahat et al., 2012). Young children with inhibited temperaments display both advantageous and disadvantageous outcomes. As noted in Chapter 3, these children are at higher risk for the development of internalizing disorders, but they are at lower risk for externalizing disorders. This lower risk may be connected to greater behavioral flexibility in challenging circumstances (see Figure 5:2). That is, children's sensitivity to environmental cues, coupled with caution and wariness, may lead to a variety of good outcomes (Davies, Cicchetti, Hentges, & Sturge-Apple, 2013).

In order to better explain the connection between early temperament and outcome, a number of researchers have examined the role of caregivers' responses to their inhibited children. These researchers report

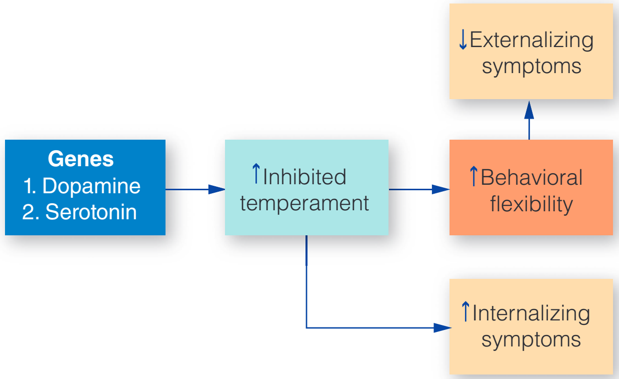

FIGURE 5:2 An illustration of the genetic origins and possible outcomes of inhibited temperament. From Davies, Cicchetti, Hentges, & Sturge-Apple (2013).

poorer outcomes—meaning more stable and more extreme inhibition and anxiety—for children who have parents who are overinvolved, controlling, or intrusive (Booth-LaForce & Oxford, 2008; Nachmias, Gunnar, Mangelsdorf, Parritz, & Buss, 1996). Of course, not all shy or exuberant children go on to struggle with anxiety or conduct disorders, and not all adults with anxiety or conduct disorders were shy or exuberant as children; there are multiple developmental pathways to both adjustment and maladjustment.

Insecure attachments, in themselves, are not disorders. They are risk factors. Although it is certainly true that many young children with insecure attachments would benefit from early intervention (Cassidy et al., 2013), insecure attachments do not inevitably lead to poor outcomes (just as secure attachments do not assure trouble-free childhoods). Young children with insecure attachments are at higher risk for the development of both internalizing and externalizing disorders (Cassidy et al., 2013). With respect to peer relationships in childhood, social skills and social outcomes are clearly affected (Sroufe, 2005). Patterns of withdrawal and victimized children, as well as patterns of aggression and bullying children, are frequently noted (Sroufe, 2005; Troy & Sroufe, 1987). And across the lifespan, relationship difficulties involving friends, romantic partners, and, later, children may be observed (Cassidy et al., 2013; Sroufe, 2005).

Young children with disorganized attachments are at even greater risk than children with avoidant or resistant attachments (Rutter et al., 2009; Solomon & George, 1999b). Disorganized attachment is more likely to be associated with later externalizing symptoms compared to internalizing symptoms; this association is stronger for boys than for girls (Fearon, Bakermans-Kranenburg, van IJzendoorn, Lapsley, & Roisman, 2010; Groh, Roisman, van IJzendoorn, Bakermans-Kranenburg, & Fearon, 2012). For children with disorganized attachments, troubling indications of early dissociation, such as spacing out or being unaware of what just happened, are sometimes observed (Ogawa, Sroufe, Weinfield, Carlson, & Egeland, 1997; Solomon & George, 1999b). Dissociation is an especially concerning symptom because it reflects disrupted integration of the core functions of consciousness, including memory, identity, and awareness of the environment.

Disorders of Early Development

As noted previously, parents, health professionals, and others pay close attention to various signs of distress and dysfunction in infants, toddlers, and preschoolers. With early identification and treatment of atypical patterns of feeding, sleeping, and attachment, young children are likely to display better immediate and long-term outcomes. Two types of feeding disorders are fairly dramatic but infrequently observed (Benoit, 2009): **pica**, or the ingestion of nonfood substances such as paint, pebbles, or dirt; and **rumination**, or the repeated regurgitation of food. More common are feeding disturbances related to not eating enough for typical growth and development. A brief overview of this kind of problem, **avoidant/restrictive food intake disorder**, is presented next.

Avoidant/Restrictive Food Intake Disorder

Although the organization of efficient and effective feeding is an especially salient developmental task in infancy and early childhood, there are few uniformly accepted categories of feeding disorders. In part, this is because it is not easy to determine when feeding quirks become feeding problems and when feeding problems become disorders (Benoit, 2009). According to recent estimates, 25% to 45% of typically developing children and up to 80% of developmentally delayed children experience some type of feeding problem (Bryant-Waugh, Markham, Kreipe, & Walsh, 2010).

Current research and clinical efforts attempt to identify subtypes that differentiate difficulties on the basis of cause, course, and treatment (Bryant-Waugh et al., 2010; Chatoor & Ammaniti, 2007). These subtypes include children with limited appetites (e.g., apathetic, withdrawn children who communicate poorly with caregivers; energetic children who are more interested in playing than eating; children with developmental disorders or medical conditions), children with selectivity (e.g., children who severely limit their diets to very few foods), and children with fear of feeding (e.g., children who have experienced aversive food episodes such as choking or painful feeding) (Kerzner et al., 2015). Avoidant/restrictive food intake disorder is one of the eating disorders described in DSM-5. It is observed in young children, elementary-school-aged children, and adolescents (Fisher, Gonzalez, & Malizio, 2015; Kurz et al., 2015). Although the focus of this chapter is on infants and young children, we will return to this disorder, as well as others, in the chapter on eating disorders later in this book.

The Case of Jalen

> Jalen is a six-month-old infant referred by his pediatrician to a feeding clinic in a children's hospital. Jalen recently experienced a severe gastrointestinal illness that led to decreased appetite and repeated refusal to drink from his bottle. After growing concerned about possible weight loss, Jalen's parents began to feed him by bottle while he was sleeping. Consequently, even as Jalen recovered from his illness, he lost interest in feeding when awake. From a behavioral viewpoint, Jalen has lost the positive connection between the act of sucking and relief from hunger. From a psychodynamic perspective, the cuddling and play that often accompanied feeding have been replaced by tension. In this case, the feeding clinic provided both reassurance and education to the parents regarding the problematic pattern that has been established, as well as the steps necessary to change the behavioral patterns and emotionally unpleasant interactions. Specifically, the staff worked with the parents to set up a feeding schedule designed to heighten Jalen's experience of hunger when he is awake and to foster an appreciation of the feeding interaction's positive emotional and social consequences. ■

The Case of Grace

> Grace is a three-year-old girl who experienced in-utero drug and alcohol exposure. She was born prematurely and suffered extensive neglect in her first year before being removed from her home and placed in foster care. Significant developmental delays, particularly in the areas of cognition and speech, have been documented. Although Grace has always been a fussy eater, her diet has become progressively more restricted, and she is now at the point of subsisting almost entirely on apple juice and French fries. Intervention efforts involving Grace's foster parents and early childhood special education services centered on gradually introducing new foods and reinforcing Grace for tasting them. Providing more structured mealtimes, with social stimulation and clear reinforcement, was also helpful in expanding the range of Grace's food options. Equally important was the focus on promoting reciprocity and decreasing conflict in the child–caregiver relationship. ■

Developmental Course

From the start, feeding involves the integration and coordination of internal processes (such as orienting, sucking, and swallowing) and relational processes (such as communication and reciprocity). By the time infants make the transition to solid foods (typically between four and six months of age), pleasant patterns of interactions between most infants and their parents have evolved. Benoit (2009) summarizes the infant characteristics that underlie this process, including the ability to experience hunger and satiety, oral–sensory and oral–motor functioning, developmental readiness, and past feeding experiences. Over the early years, many young children display peculiar food behaviors: eating macaroni and cheese every meal, making sure that different foods do not touch, or refusing previous favorites. Almost always, these are temporary situations and are not cause for alarm.

Sometimes, however, as with Jalen and Grace, the process goes awry. When it does, the responses of caregivers may exacerbate the situation. Even though Jalen's parents were well intentioned, feeding Jalen while he was sleeping made daytime feeding more difficult. Because being able to nourish infants successfully is a notable early parenting achievement, ongoing feeding problems may have an increasingly negative impact on the caregiver. Feelings of personal incompetence, as well as anger toward the child, may create additional distress and dysfunction, with increasing difficulties related to amounts of food, choices of food, and mealtime behavior. More serious situations may be associated with poor growth and compromised development (Bryant-Waugh et al., 2010; Kerzner et al., 2015).

Etiology

Feeding difficulties may be the result of developmental delays, genetic conditions, or abnormalities of oral anatomy. Some infants may be less sensitive to feelings of hunger or may present signals that are unclear or difficult to read by their caregivers. Temperament differences also may come into play, with children who are highly reactive to new stimuli responding more negatively to the introduction of new tastes and textures. Infants who, for a variety of reasons, are too excited or too distressed to eat are at risk (Chatoor, 2002; Kerzner et al., 2015). For certain children, including Grace, the issue of control may be important. For other children, such as Jalen, a traumatic event like serious illness, with associated physical discomfort and stomach pain, may interfere with typical developmental accomplishments. Parents who are controlling or coercive, indulgent, or neglectful, or those who have poor parenting skills, may also contribute to the emergence of feeding disorders (Davies et al., 2006; Kerzner et al., 2015). In addition, parents who struggle with mental health issues (such as an eating disorder) or live in chaotic environments are more likely to have children who struggle with feeding (Davies et al., 2006; Micali, Simonoff, Stahl, & Treasure, 2010).

Assessment and Diagnosis

For all the disorders of early development, useful assessments depend on establishing a therapeutic alliance with the child's caregiver. Parents whose infants are struggling with basic developmental tasks often feel confused and guilty. Recognizing the role of parent factors in the etiology and/or maintenance of disorder does not equate with focusing blame on parents. Given the primary goal of improving the child's well-being, mental health professionals and parents need to work together to improve children's current and future adaptations.

Basic assessments involve multiple sources and multiple types of data. The first step is usually focused on gathering data about children's overall health and development, including prenatal care, birth complications, and early experiences. With feeding disorders, detailed feeding histories are obtained, and diagnostic tests of physiological functioning such as swallowing are common. Specific rating scales may be completed by parents, nurses, or therapists. Kerzner et al. (2015, p. 350) assert that asking caregivers three questions provides key information: "How anxious are you about your child's eating? How would you describe what happens during mealtime? What do you do when your child won't eat?" Actual observation of parent–child feeding interactions may be most helpful.

Intervention

Intervention is always focused on the interplay of physiological, psychological, and environmental factors and is tied to the alliance developed during the assessment process. Depending on the particular constellation of symptoms and infant–caregiver pairs, treatments range from empirically supported behavioral interventions (Kerzner et al., 2015; Larue, Patel, Piazza, Stewart, Volkert, & Zeleny, 2011) to more psychodynamically informed approaches focused on relationships, vulnerability, and conflict (Chatoor, 2002). Benoit and Coolbear (1998) describe a three-part treatment designed for children who struggle with feeding following a trauma. They suggest that physiological and environmental changes be made to address the dysfunction in cycles of hunger and satiety. In Jalen's case, the parents needed to stop feeding Jalen while he was sleeping so he could reexperience hunger when awake. The second part of treatment involves nutritional monitoring. In Jalen's case, careful measurement of intake and weight gain is required. The third part of treatment focuses on behavioral techniques. For Jalen, this involved emphasizing the positive social and emotional aspects of feeding situations in order to make these interactions more rewarding.

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Effective infant feeding involves the coordination of the physiological and behavioral skills of the infant and the relational processes between the infant and caregiver.

Sleep–Wake Disorders

Several **sleep–wake disorders** diagnosed in both adults and children are described in DSM-5, including insomnia (e.g., difficulties falling and staying asleep), disorders of arousal (e.g., sleep terrors or sleepwalking), and nightmare disorder. In the early years of life, for typically developing children, difficulties going to sleep, difficulties staying asleep, and nightmares are frequently observed, with estimates of incidence ranging from 10% to 30% in families with young children (Anders & Dahl, 2007). For atypically developing children, estimates of sleep problems are much higher (Gregory & Sadeh, 2015). Of course, sleep disruption and disturbance are not only identified in young children. Older children and adolescents also display a number of sleep-related difficulties that require diagnosis and treatment (McGlinchey & Harvey, 2014). Sleep difficulties also play a role in the etiology and course of several non-sleep-wake disorders; these sleep factors will be discussed in multiple upcoming chapters. The following case, summarized from Dahl (1996), provides a more personal view.

The Case of Maddie

> Maddie was a 16-month-old girl brought in by her mother for chronic difficulties with night waking. For months, Maddie would awaken several times each night and would often require hours of interaction with her parents to get back to sleep. She was also resistant to daytime naps (except when falling asleep during car rides). Other aspects of her health, growth, and development were completely normal. Maddie's behavior during the day, however, showed extreme irritability, fussiness, and very low frustration tolerance. She cried frequently and was difficult to console when upset. Also, her attention span was very short and she changed activities rapidly. Her parents, equally fatigued and frustrated at their inability to get Maddie to sleep, dreaded the nighttime hours. Maddie's sleep problems responded well to a behavioral program focused on self-comforting and cessation of parental involvement at sleep onset. The change in daytime behavior was equally positive, with decreases in negative emotions and improved attention. Maddie is now a more pleasant, happy child with much better relationships. ■

Maddie's situation is appropriately identified as a disorder because it reflects marked and persistent difficulties settling down and falling asleep, as well as maintaining sleep through the night. These ongoing difficulties are associated with impaired daily functioning and increasingly distressed relationships with her caregivers.

Developmental Course

Although many sleep difficulties and disorders resolve over time, many persist. Night waking problems tend to decrease over time, whereas sleep onset problems such as bedtime resistance and bedtime struggles remain stable or increase in frequency or severity (McGlinchey & Harvey, 2015). It is important to keep in mind that the course of infant and toddler sleep disorders is superimposed on the changing course of sleeping during the first three years of life. Observing that over half of these years are spent sleeping, Dahl (1996, p. 3) states that sleep is the "*primary* activity of the brain" during infancy. As noted previously, adequate, good-quality sleep is essential for cognitive, emotional, and social development, as well as overall well-being (Goldstein & Walker, 2014; Kelly & El-Sheik, 2014).

The immediate consequences of sleep disorders are observed in both children and their families. Children's daytime emotions and moods, attention and cognitive activities, and social relationships are all likely to be negatively affected. "Indeed, the restorative properties of sleep may facilitate children's capacity to take advantage of positive caregiving influences, whereas poor sleep may interfere with children's receptivity . . . by making them tired and irritable" (Bernier, Matte-Gagne, & Bouvette-Turcot, 2014, p. 287). Tired and distressed children are also likely to have tired and distressed parents. Investigators have documented negative impacts on parents' self-efficacy, parents' marital satisfaction, and overall family climate (Fiese, Winter, Sliwinski, & Anbar, 2007; Meijer & van den Wittenboer, 2007). Longer-range consequences also have been described, including behavioral difficulties such as acting out, academic difficulties, and ongoing family conflict (El-Sheikh, Buckhalt, Cummings, & Keller, 2007). Even more problematic outcomes, such as the development of other forms of psychopathology and the exacerbation of already diagnosed disorders, have been identified (Kelly & El-Sheikh, 2014).

Etiology

"Sleep is a very vulnerable state that can be affected by a variety of medical, physiological, environmental, and psychological factors" (Gregory & Sadeh, 2015, p. 298). Individual variations in the ability to self-regulate and self-soothe are frequently mentioned as contributing to sleep difficulties and are tied to underlying differences in the physiological systems related to arousal and attention (El-Sheikh & Sadeh, 2015). Difficult temperament has been cited as a risk factor (De Marcas et al., 2015). The child being diagnosed with a medical condition that makes sleep difficult or a neurodevelopmental disorder such as autism spectrum disorder or intellectual developmental disorder is another risk factor (Gregory & Sadeh, 2015). Children who display insecure attachments are also more likely to display sleep problems (Belanger, Bernier, Simard, Bordeleau, & Carrier, 2015).

Parent factors such as problematic cognitions related to setting limits (e.g., thinking that enforcing a bedtime reflects controlling or mean parenting) and anxiety and/or depression increase the likelihood of sleep disorders (Sadeh, Flint-Ofir, Tirosh, & Tikotzky, 2007). Marital difficulties may increase children's sleep problems (Mannering et al., 2011). Racial, ethnic, and cultural values and practices are also important to take into account (El-Sheikh & Sadeh, 2015). Co-sleeping provides one example. Whether co-sleeping is viewed by the family and/or by the clinician as a negative consequence of child awakening or as a positive family experience is a clinically relevant factor. Other factors, such as the ability to purchase appropriate bedding or to live in neighborhoods that are quiet at night, must also be taken into account (El-Sheikh & Sadeh, 2015).

Many investigators emphasize the distinction between factors that influence the *emergence* of sleep disorders and factors that influence the *maintenance* of disorders (Minde, 2002). For instance, transient disturbances such as ear infections or teething may lead to parents offering high levels of physical comforting during bedtime; continuing these bedtime interactions may reinforce maladaptive patterns for non-self-soothing infants and toddlers and may exacerbate existing sleep difficulties.

Assessment and Diagnosis

Because we expect to see many changes in patterns of infant sleep, it is difficult to know exactly when to diagnose a sleep disorder. In addition to general information about child health and development, sleep diaries are often requested from parents (McGlinchey & Harvey, 2014). Additional assessment includes information about how the child's sleep schedule affects his or her daily functioning and how the child's sleep difficulties affect family life. Here, the degree of parent tolerance for sleep disruptions may influence whether and when parent concerns lead to seeking help. Sometimes lab assessments, in which babies are directly observed and physically monitored while they sleep in the hospital, are necessary to rule out physiological complications such as sleep apnea (McGlinchey & Harvey, 2014). Finally, sleep disorders are often diagnosed in combination with feeding disorders, so careful assessment of related difficulties is important (Gregory & Sadeh, 2015).

Intervention

Of course the best intervention is prevention. Parent education programs that describe the importance of schedules and routines, various soothing techniques, and responses to the inevitable nighttime awakenings are helpful in establishing good sleep habits and reducing sleep problems (Gregory & Sadeh, 2015; McGlinchey & Harvey, 2014). Behavior therapies and other dynamically oriented approaches (focused on relationships and parent adjustments) have been used to treat infants, toddlers, and young children with sleep disorders. Behavioral approaches are based on principles of learning (e.g., reinforcement, extinction, and shaping) and focus on providing parents with effective techniques that target particular problems (e.g., falling asleep or staying asleep). Medications are sometimes prescribed, but there is little evidence that they are associated with immediate or lasting improvement (McGlinchey & Harvey, 2014). Although nightmares and night terrors are usually transient and outgrown without specific interventions, children often appreciate reassurance and comfort following a nightmare. In situations where young children experience agitated episodes of sleepwalking or night terrors, making sure that the child is safe is essential (McGlinchey & Harvey, 2014).

Disorders of Attachment

Some young children exhibit such extreme attachment-related distress and dysfunction that they are best understood as having a clinically significant disorder (Steele & Steele, 2014; Zeanah & Gleason, 2015). DSM-5 describes two categories of attachment disorders, **reactive attachment disorder (RAD)** and **disinhibited social engagement disorder (DSED)**. The DSM-5 criteria are summarized in Tables 5:2a and 5:2b.

TABLE 5:2A Reactive Attachment Disorder: Summary of DSM-5 Diagnostic Criteria

A. Consistent pattern of inhibited, emotionally withdrawn behavior toward caregivers
  1. Rarely or minimally seeks comfort when distressed
  2. Rarely or minimally responds to comfort when distressed

B. Persistent social and emotional disturbance
  1. Minimal social and emotional responsiveness to others
  2. Limited positive affect
  3. Episodes of unexplained irritability, sadness, or fearfulness during nonthreatening interactions with caregivers

C. History of extreme insufficient care, such as:
  1. Social neglect or deprivation
  2. Repeated changes of primary caregivers
  3. Rearing in settings that severely limit opportunity to form selective attachment relationships

TABLE 5:2B Summary of DSM-5 Criteria for Disinhibited Social Engagement Disorder

A. Pattern of approaching and interacting with unfamiliar adults characterized by behaviors such as:
  1. Reduced or absent reticence in approaching unfamiliar adults
  2. Overly familiar verbal or physical behavior
  3. Diminished or absent checking back with adult caregivers
  4. Willingness to go off with unfamiliar adults

B. Behaviors in Criterion A not limited to impulsivity, but rather include socially disinhibited behavior

C. History of extreme insufficient care, such as:
  1. Social neglect or deprivation
  2. Repeated changes of primary caregivers
  3. Rearing in settings that severely limit opportunities to form selective attachment relationships

The Case of Andreas

Andreas is 30 months old. He and his mother were referred by staff at Andreas's day care center, who described him as almost never seeming to be settled and calm. Unlike most of the other children around his age, he seemed to have no preferred activities or real connection with specific caregivers. They described him as nervous, wary, easily upset, and difficult to comfort. One of the day care staff noted that "Andreas just doesn't seem to find anything delightful. He seldom smiles, almost never laughs, and when we try to comfort him, he often becomes even more agitated." When these concerns were reported to Andreas's mother, she did not seem to realize that his behaviors were unusual or concerning. As part of the clinical intake, Andreas's mother acknowledged that she had spent very little time with Andreas after his birth. She described his first 18 months as a time when she struggled to get out of an abusive relationship with his biological father. She noted that she frequently fled their apartment and would stay away for up to a month at a time without Andreas. She acknowledged fearing that Andreas was likely neglected, and possibly abused, by his father and his friends, who spent most of their days and evenings in the apartment using and selling drugs. Andreas's mother reported that when Andreas was 2, she finally found a way to leave the abusive relationship and move in with her mother, who has been supportive. She notes that while life feels safer and more stable, she also feels that she is just now learning how to be a good mother to Andreas. ■

As described in the case of Andreas, reactive attachment disorder (RAD) involves an absence of attachment behaviors, failure to seek comfort when distressed, reduced social and emotional reciprocity, reduced positive emotion, increased negative emotion, and poor emotion regulation (Zeanah & Gleason, 2015). Children with RAD display "core deficits in self and social development" (Steele & Steele, 2014, p. 362). RAD is rare in the overall population and is almost always diagnosed in children with very adverse experiences, such as institutionalization or chronic maltreatment (Rutter et al., 2009; Steele & Steele, 2014; Zeanah & Gleason, 2015).

The Case of Lily

Lily is 36 months old. She and her parents were referred by a county social worker who has worked with the family for years. The social worker, having observed Lily during home visits and in her early childhood day care program, expressed concern about her indiscriminate and overly affectionate engagement of nearly every adult she encounters. These behaviors are not only evident at day care, away from her parents, but in the home as well, when her parents are present. The social worker also notes that when Lily becomes frustrated or upset, she often seems to prefer comfort and help from adults relatively unfamiliar to her rather than from her parents.

Both of Lily's parents have documented cognitive delays and major mental illnesses. Two of Lily's older siblings were removed from the home and have been in long-term foster care after child protection services were alerted to conditions of severe neglect. Although Lily's parents have had more support since her birth and are functioning better than in years past, they struggle with a broad range of daily care activities in their own lives and as parents. They rightly count as progress their ability to better feed and clothe Lily, but they provide very little developmentally appropriate stimulation for her. For example, they generally choose to leave her alone in front of the TV for hours rather than play with her or take her to the nearby playground. At times, when prompted by county case workers involved with the family, they make a greater effort to engage Lily, but they are generally unable to sustain these interactions. They have been observed to overreact to Lily's attempts to get attention and, at other times, to ignore these types of behaviors altogether until she finally gives up. Although they continue to accept help from the county in an effort to head off Lily's removal from their home, it is clear that more intensive services are necessary. ■

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Children with disinhibited social engagement disorder (DSED), as demonstrated in the case of Lily, display a lack of wariness, an inappropriate approach to strangers, and a lack of physical and social boundaries. This atypical social behavior is noteworthy, given most children's caution around strangers and in unfamiliar settings (Zeanah & Gleason, 2015). Children with this disorder also exhibit socially superficial behavior and attention seeking; inappropriate physical contact (e.g., hugging or climbing into laps) is also observed (Steele & Steele, 2014; Zeanah & Gleason, 2015). This indiscriminate sociability may be understood as part of a larger pattern of dysregulation (Pears, Bruce, Fisher, & Kim, 2010). Children with DSED may be observed in children with various attachment backgrounds, including secure attachments. Compared to reactive attachment disorder's focus on atypical attachment behaviors, disinhibited social engagement disorder is focused on atypical social behaviors. DSED is more frequently diagnosed than RAD (Steele & Steele, 2014; Zeanah & Gleason, 2015).

Developmental Course

Young children diagnosed with disorders of attachment may follow a number of developmental pathways, which include both resilience and psychopathology. An especially compelling review of the developmental course of attachment disorders is provided in Box 5:2, a summary of contemporary studies that focus on children from Romanian orphanages.

Many children with disorders of attachment exhibit ongoing difficulties in physiological, emotional, behavioral, and cognitive domains. The most salient effect of disordered attachment is observed in children's relationships (with caregivers, other adults, and peers). With respect to physiological correlates of attachment disorders, there are abundant data about negative sequelae involving the development and organization of the brain and stress systems, with a variety of impacts on infant sensitivity to stress, infant arousal, and infant responsivity (Nolte, Guiney, Fonagy, Mayes, & Luyten, 2011; Oosterman, De Schipper, Fisher, Dozier, & Schuengel, 2010; Zeanah & Gleason, 2015).

The emphasis on cognitive components of attachment and the development of internal models and mental representations provide a theoretical basis for the association between attachment disorders and cognitive difficulties. With respect to cognitive content, Greenberg, Speltz, and DeKlyen (1993, p. 201) have observed that insecure children have cognitive models "in which relationships are . . . characterized by anger, mistrust, chaos, and insecurity." A six-year-old child's story of what happens in playing with dolls illustrates this point: "And see, and then, you know what happens? Their whole house blows up. See. . . . They get destroyed and not even their bones are left. Nobody can even get their bones. Look. I'm jumping on a rock. This rock feels rocky. Aahh! Guess what? The hills are alive, the hills are shakin' and shakin'. Because the hills are alive. Uh huh. The hills are alive. Ohh! I fall smack off

Taro Yamasaki/Time Life Pictures/Getty Images

The absence of consistent and competent care provided by a reliable attachment figure is a significant risk factor for later psychopathology.

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BOX 5:2

Risk and Resilience

Children in Romanian Orphanages: Risks, Interventions, and Outcomes

Concerns over breakdowns in early caregiving predated research on attachment. In fact, prior to his work on attachment theory, John Bowlby, as well as other psychiatrists working in the 1940s and 1950s, called attention to the devastating developmental impact of early psychological deprivation. In orphanages, hospitals, and residential nurseries, clinicians observed infants and young children whose basic physical requirements were met, but whose emotional and social needs went unrecognized and unfulfilled. Whereas some orphanages provided babies with both nutrition and nurturance, others—because of overcrowding, lack of resources, and lack of knowledge—provided only the barest essentials: a crib, bottles of milk, and rigid feeding and changing schedules. Caregivers changed from morning to evening; intimate and enduring relationships were impossible.

We know now that a cheerful, stimulating environment, with warm and consistent caregiving, is the foundation for psychological growth. But this knowledge has not eliminated the poor institutional care that was blamed for the intellectual, emotional, and social struggles of so many deprived children during and following World War II. We have only to look at the more recent experiences of children in Romanian and other Eastern European orphanages to see that—for multiple reasons—basic needs for contact, care, and comfort from a familiar adult are too often unmet.

The experiences of Romanian babies abandoned to poor-quality institutions and later adopted (or fostered) by well-functioning families have been described in several longitudinal research programs, including the English and Romanian Adoptees (ERA) study in the United Kingdom (Kumsta et al., 2015; Rutter, Sonuga-Barke, & Castle, 2010) and the Bucharest Early Intervention Program (BEIP) in the United States (Nelson, Fox, & Zeanah, 2014). The ERA study, which has followed Romanian children adopted by English families from infancy to adolescence, documented marked improvement in physical health and psychological functioning for many children following adoption, as well as continuing cognitive and mental health difficulties for a substantial minority of children. One finding of particular interest is that several distinctive patterns of compromised development, called *deprivation-specific psychological patterns (DSPs)*, are evident among these children (Kumsta et al., 2010). These patterns include "quasi-autism," "disinhibited attachment," "cognitive impairment," and "intervention/overactivity." Whereas the specific problems described by these patterns are common in clinical populations, the ERA researchers believe that the DSPs reflect patterns of maladaptive development that are directly linked to early deprivation.

The BEIP study represents a unique "natural experiment" in which infants and toddlers from Romanian institutions were placed in high-quality Romanian foster homes and compared, over time, with children who continued to be institutionally raised. Factors ranging from genetic sensitivity to caregiving (Drury et al., 2011) to varied psychiatric outcomes (Humphreys et al., 2015) are being considered carefully in a set of longitudinal studies. These studies provide data about wide-ranging developmental delays and patterns of maladjustment, as well as frequent instances of resilience and the possibility of remarkable recovery. BEIP research has shown, for example, that children in foster care display more typical brain activity over time (Vanderwert, Zeanah, Fox, & Nelson, 2016), and that children who displayed greater attachment security developed fewer internalizing disorders (McLaughlin, Zeanah, Fox, & Nelson, 2012).

Both the ERA and BEIP studies have documented the powerfully negative impact of early deprivation on physical, cognitive, emotional, social, and behavioral development. As salient as these negative consequences of early deprivation are, it is equally impressive to note the dramatic turnarounds that may occur with family placements. Improvements have been described for all types of physiological, psychological, and social functioning, with normalization of some domains and the diminishment of severity of disorder in others. Even with these positive outcomes, we need to keep in mind that many children continue to struggle; appropriate interventions for all children remain the focus of ongoing research.

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a hill. And get blowed up in an explosion. And then the rocks tumbled down and smashed everyone. And they all died" (Solomon & George, 1999b, p. 17).

For children diagnosed with reactive attachment disorder, improvements occur when they are placed in better caregiving environments. For example, institutionalized children who are adopted or fostered display positive attachment behaviors fairly quickly. Catch-up rates are observed first for physical development, then for cognition (although there are some ongoing delays). Improvements are slowest in the social domain. For children who experience profound early deprivation, it is remarkable how many "may still be open to responding to positive security-promoting qualities of the parent–child relationship" and will be able to turn to a caregiver for comfort and protection (Steele & Steele, 2014, p. 364). For children who remain in institutional care, the stability of the attachment disorder diagnosis is high (Zeanah & Gleason, 2015).

For children diagnosed with disinhibited social engagement disorder, many difficulties persist, sometimes into adolescence. This is the case even with more favorable caregiving environments. Longer periods of time spent in institutions are associated with more persistent difficulties for children with DSED (Steele & Steele, 2014; Zeanah & Gleason, 2015). With respect to later forms of psychopathology, depression appears more often in children with RAD and impulsive disorders appear more often in children with DSED (Zeanah & Gleason, 2015).

Etiology

Much of what is known about the etiology of disorders of attachment is based on what we know about the development of insecure patterns in typical and at-risk children. According to Zeanah and Smyke (2009, p. 421), "[t]he propensity for human infants to form selective attachments is believed to be so strong that only in highly unusual and maladaptive caregiving environments do attachments fail to develop. For infants raised in species-atypical rearing conditions, however, seriously disturbed and developmentally inappropriate ways of relating may evolve. Examples of atypical environments include institutions (i.e., orphanages), frequent changes of caregivers (as sometimes happens in foster care), neglectful or abusive caregivers, or being raised by insensitive or unresponsive caregivers."

For both RAD and DSED, the role of caregiving (i.e., caregivers and the caregiving environment) is primary. Neglectful and abusive caregiving leads to insecurity and disorders of attachment, with more neglect and more abuse associated with increasingly negative outcomes. Extremely adverse caregiving environments include institutions and problematic foster care and home settings that are characterized by chronic maltreatment and domestic violence (Bernier & Meins, 2008; Zeanah & Gleason, 2015). "Institutional rearing due to its regimented nature, high child-to-caregiver ratios, multiple shifts, and frequent changes of caregivers almost inevitably deprives children of reciprocal interactions with stable caregivers" (Steele & Steele, 2014, p. 363).

Remember, however, that not all children in these environments develop attachment disorders. We need to consider other risk factors that help explain the most maladaptive pathways. Reviews of parent factors include personality and psychopathology, attachment history, and other contextual variables. Mental illness in parents has received a lot of attention (Seifer & Dickstein, 2000). Maternal depression, bipolar disorder, anxiety, substance abuse, and schizophrenia have all been associated with greater frequency of insecurity in children. With respect to disorganized attachment, pathological parenting (e.g., frightening and fearful behaviors) is hypothesized to reflect unresolved conflicts related to the caregiver's attachment (Hesse & Main, 2006; Lyons-Ruth, Yellin, Melnick, & Atwood, 2005). Pathological parenting is often, but not always, coupled with insensitive parenting (Bernier & Meins, 2008; Rutter et al., 2009). Neglectful and abusive caregiving also may occur in the context of chronic interparental conflict, hostility, and violence (Cummings & Miller-Graff, 2015; Davies & Martin, 2013).

With respect to genetic influences on children's disorders of attachment, results from various investigations suggest increased differential sensitivity to poor parenting (i.e., insensitivity and/or frightening or other atypical behavior) (Drury et al., 2011; Zeanah & Gleason, 2015). There is also evidence that children with certain neurological difficulties, such as Down syndrome or autism, may display unusual attachments. Children with disorganized attachments are at greater risk for DSED (Zeanah & Gleason, 2015).

Assessment and Diagnosis

In contrast to much of the research-oriented assessment of attachment in typical and at-risk samples of young children, the clinical assessment of disorders of attachment involves more naturalistic data collection (O'Connor & Zeanah, 2003). Home visits or assessments in homelike settings are preferable, and in some cases may be necessary. Parent reports and observations are an important source of information (Zeanah & Gleason, 2015).

Perhaps the most important contributions to the accurate assessment of disorders of attachment are observations of the child in his or her everyday environment. For reactive attachment disorder, clinical interpretations of real-life caregiver–child interactions are essential for understanding the dynamics of attachment (and the absence of attachment behaviors). For disinhibited social engagement disorder, observation of the child in social settings is essential. In the clinical cases presented earlier in the chapter, direct observation of the children contributed to making the correct diagnosis.

Although much of the research and clinical attention currently paid to disorders of attachment is focused on young children, it is likely that many instances of these disorders will be identified and assessed in older children. With increasing age, it becomes more important to develop a working alliance with a child or adolescent in order to make an accurate diagnosis and design an appropriate intervention. Older children and adolescents often exhibit multiple problems, including aggression, anxiety, and depression, with a number of children meeting the diagnostic criteria for several disorders. Some of these disorders have their etiological roots in disorders of attachment, and others do not. A comprehensive assessment—whether simple and straightforward or messy and complicated—will always keep the child in full view.

Intervention

Within the framework of developmental psychopathology, it is both theoretically and practically easier to prevent the development of disorder than it is to intervene effectively. However, children, parents, and mental health professionals must deal with real-life circumstances. Real life demands that we design and validate therapeutic interventions for disorders of attachment.

Prevention

Prevention strategies related to disorders of attachment can be usefully categorized as *universal measures* for the general population, *selective measures* for groups at above-average risk, and *indicated measures* for groups with specific risk factors that require more extensive help. One example of a universal measure designed to promote infant and parent well-being is the early child education program, delivered before and after the baby is born (Feinberg & Kan, 2008). Clinicians also have been successful in strengthening parent–child relationships using psychodynamic filial therapy (VanFleet, Ryan, & Smith, 2005). Erickson's Steps Toward Effective, Enjoyable Parenting (STEEP) model (Erickson, Korfmacher, & Egeland, 1992), based on the Minnesota Mother–Child Project, targets at-risk parents. Another ambitious, multidisciplinary, home-based model was developed by Cicchetti and Toth (1987, 1995) in Rochester, New York, involving social workers, psychologists, psychiatrists, special educators, and other health professionals and focusing on parent, child, and environmental variables.

Prevention-oriented intervention can also be provided to caregivers at high risk for maltreatment. The Attachment and Biobehavioral Catch-up (ABC) program is a brief intervention that targets three key behaviors: providing nurturant care when children are distressed, following children's leads when they are not upset, and not exhibiting frightening behavior (Dozier & Roben, 2015). Young children whose parents participated in the program displayed more secure and more organized attachments (Bernard et al., 2012).

An ambitious approach to prevention via institutional change has been advocated by McCall and Groark (2015). In orphanages in Russia and Central America where training on sensitive caregiving was provided, and where attempts were made to enhance positive relationships by reducing the number of children per caregiver, young children displayed more positive patterns of emotions and behaviors. Out-of-institution placement into adoptive families and foster homes is the preferred goal. When family care is not possible, however, providing the best possible care should be the focus of child welfare policies.

Child Treatment

With respect to therapeutic approaches for children already diagnosed with reactive attachment disorder or disinhibited social engagement disorder, meaningful improvement depends on the duration and degree of disorder, particular etiology, age of the child, and the scope of environmental change. Zeanah and Smyke (2009, p. 429) make clear that "the first priority of treatment is to establish a safe and stable caregiving environment with a warm and consistent caregiver," with the goals of enhancing adaptive behaviors and decreasing maladaptive behaviors. Further, they suggest that optimism is warranted because "it is so crucial for children to form and sustain attachments to caregiving adults that they retain the capacity to do so once environments improve" (p. 430). In fact, with adoption or positive foster placements, children with RAD display significant improvement; symptoms diminish or disappear in sensitive caregiving environments. The symptoms of DSED are more persistent, so children with that disorder require additional treatment components beyond enhanced caregiving (Zeanah & Gleason, 2015).

A noteworthy example of the repair of attachment relationships is provided by Stovall and Dozier's case studies of new attachments in very young children placed in foster care. Stovall and Dozier (2000) explored the effects of early versus later placement and the attachment status of the foster parent. New, secure attachments developed over the course of two months for those children placed early with foster parents with positive adult attachment status. Children placed later, or those placed with adults with unresolved or dismissive adult attachments, exhibited insecure attachments. Foster parents who responded to their children's difficult and often alienating behaviors with more sensitive caregiving were more likely to have securely attached children.

Treatments also are provided to adolescents who were maltreated as children. For adolescents in foster care, the development of an attachment relationship with a foster parent predicts fewer externalizing problems. It is encouraging that there is still "substantial potential for maltreated children to change and develop subsequent secure attachments in adolescence" (Joseph, O'Connor, Briskman, Maughan, & Scott, 2014, p. 67). Other clinical research confirms that hard-to-reach adolescents are able to make important connections to therapists using attachment-based strategies that support their therapy goals (Bevington, Fuggle, & Fonagy, 2015).

Infant–Parent Psychotherapy

In other clinical approaches, Lieberman and Pawl (1993) and Lieberman and Van Horn (2009) describe infant–parent psychotherapy based on Fraiberg's work (Fraiberg, Adelson, & Shapiro, 1980). In infant–parent psychotherapy, there is a joint emphasis on what the parent and the child each bring to the difficult relationship, as well as the subjective experiences of both parent and child. This psychotherapy is a collaborative endeavor, with the therapist and parent working together to create agendas, determine goals, and establish procedures for evaluation. Acknowledging complex parent motivations and feelings, including "anger, relief, reluctance, and hope" (Lieberman & Pawl, 1993, p. 429), is important. Lieberman and Zeanah (1999) further note that the therapist's positive regard for the parent(s) and his or her empathy and attention during difficult moments illustrate adaptive and positive ways of relating, which the parent(s) can—over time—both internalize and express in attachment relationships. Infant–parent psychotherapy has proven useful for varied clinical samples, including infants in maltreating families (Cicchetti, Rogosch, & Toth, 2006; Lieberman & Van Horn, 2009).

Key Terms

Temperament (p. 67)
Reactivity (p. 67)
Regulation (p. 67)
Differential sensitivity (p. 69)
Resistant (anxious/ambivalent) attachment (p. 72)
Avoidant (anxious/avoidant) attachment (p. 72)
Disorganized attachment (p. 72)
Pica (p. 74)
Rumination (p. 74)
Avoidant/restrictive food intake disorder (p. 74)
Sleep–wake disorders (p. 76)
Reactive attachment disorder (RAD) (p. 78)
Disinhibited social engagement disorder (DSED) (p. 78)

Chapter Summary

- There is widespread acceptance of the need to identify and respond to young children's distress and dysfunction.
- Recent research in areas such as physiological development, temperament, and attachment is contributing to the emerging field of infant mental health.
- Temperament is best understood as basic dispositions in the domains of activity, affectivity, attention, and self-regulation, and is reliably related to later personality.
- The development of a secure attachment relationship between infant and caregiver is the critical task in the first year of life.
- Secure attachment relationships are the result of consistent, appropriate responsiveness by the caregiver to the infant's physical, emotional, and social needs.
- Resistant attachment relationships stem from inconsistent caregiving behavior.
- Avoidant attachment relationships result from ineffective or inappropriate caregiving.
- Disorganized attachment relationships occur when the caregiver is associated with frightening or

malicious events. They involve a distinctive pattern of both approach and avoidance in infants.

- Early attachment relationships affect neurological and personality development and provide models for future relationships.
- Feeding disorders represent an impairment of efficient and effective feeding—an especially salient developmental task in infancy and early childhood. The sleep disorders most common in early development are those that involve significant difficulties falling or staying asleep. Other common problems are night terrors and nightmare disorder.
- The assessment of both feeding and sleep disorders requires careful consideration of general health and developmental history, as well as current behavioral and relationship patterns.
- DSM-5 describes two kinds of attachment disorders: reactive attachment disorder (RAD) and disinhibited social engagement disorder (DSED).
- Severely adverse circumstances, such as institutionalization or chronic maltreatment, contribute to the development of disorders of attachment.
- Prevention strategies range from universal measures for the general population to more selective measures, which target more specific risk factors and high-risk groups.
- There are several treatments for disorders of attachment, with a focus on providing children with a sensitive caregiving environment.

6

Intellectual Developmental Disorder and Learning Disorders

CHAPTER OUTLINE

Developmental Tasks and Challenges Related to Intelligence and Cognition

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Cognitive and Intellectual Functioning across Development

Genes, the Brain, and the Environment

Intellectual Developmental Disorder

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Zigler's Developmental Approach to Intellectual Developmental Disorder

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Developmental Course

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Assessment of Intellectual Functioning

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Family Education and Support

Learning Disorders

The Case of Ethan

Developmental Course

Etiology

Assessment, Diagnosis, and Intervention

"**ADAM DEALS WITH MANY** things more graciously than I do. Take illness, for example. My first clue that he isn't feeling well is usually a polite knock on my door in the middle of the night. After a pause, just as I'm telling myself that I didn't hear anything and should go back to sleep, a small, gruff voice will rasp, 'Mom, U'm gick.'

"I'll drag myself awake to find him standing by my bed, fraught with some horrific assortment of symptoms: blazing fevers, rashes that turn his usually flat little face into a topographical map of Nepal, chest coughs that sound like gang warfare between two prides of lions. Adam's immune system is weaker than a normal nine-year-old's, and every germ he catches rollicks gaily through his body, holding orgies of self-reproduction and sending enthusiastic invitations to others of its kind. When Adam gets gick, he gets really, really gick.

"*Gick*, if you haven't figured it out by now, is Adam's word for sick. He has learned to speak fairly well in the last few years, but the muscles of his mouth aren't formed for our language, so he often uses his own. Adamic, we call it. It is a strange dialect, in which syllables are often reversed or replaced with random consonants, sound effects, and gestures. . . .

"Eventually I get out of bed, and we go down the hall together, Adam holding my hand in his small, dry, stubby fingers. We stand in the doorway of his room and assess the damage. This is what always amazes me: if he's thrown up, he will have done his best to clean the room before involving me. 'Bleah,' he will explain, flipping his hand from his mouth outward, as though the smell alone weren't enough to tell me what happened. 'I keen.' 'Yes,' I'll say. 'You cleaned up. Thanks, buddy. Good boy.'

"Then Adam, ill and weary as he is, helps me spray the rug with cleanser, scrub out the stain, and change his sheets. He gamely swallows a dose of Tylenol, says 'Unkoo, Mom'—and flops down on his pillow, already asleep. The genetic weakness of his muscles (hypotonia, the doctors call it) lets his body fall into strange shapes, as though he has been dropped out of a plane to his death; legs twisted under him, undersize head bent too far back, chunky little arms flung wide. His small, slanted eyes flicker beneath their lids as he begins to dream. Watching him, I think he is the most beautiful child I have ever known." (from Martha Beck's *Expecting Adam*, pp. 20–21)

There have always been children like Adam: children with intellectual developmental disorder who have been the causes of bewilderment, the targets of ridicule and institutionalization, and the focus of parents' love and care. Any historical perspective on intellectual developmental disorder must include the centuries of mistaken beliefs and woeful attempts at intervention; it also must include the longstanding concern expressed for children with intellectual disabilities by parents, teachers, and mental health professionals, as well as the recent developments related to progress in mapping the human genome (see www.genome.gov).

Developmental Tasks and Challenges Related to Intelligence and Cognition

"A child's IQ is more closely related to the child's later occupational success than is the socioeconomic status of the family within which the child grows up, the family's income, the school the child attends, or any other variable that has been studied" (Siegler, 2003, p. 314). The empirical data underscore the need to understand the complex construct of intelligence and its contribution to typical and atypical development across cultures and in a variety of settings (Pennington, 2015; Sternberg, 2003). Given the many controversies surrounding the nature and assessment of intelligence, the following summaries are necessarily brief. They are organized around several key issues: (1) What are the underlying components and mechanisms of intelligence? (2) How does cognitive and intellectual development unfold over time? (3) What are the roles of genes, brain structure and function, and the environment in the development of intelligence?

Components and Mechanisms of Intelligence

The most basic question involves the nature of intelligence. Our working definition of intelligence is provided by Gottfredson (1997, p. 13): "[Intelligence] . . . involves the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly and learn from experience. It is not merely book learning, a narrow academic skill, or test-taking smarts. Rather it reflects a broader and deeper capability for comprehending our surroundings—'catching on,' 'making sense' of things, or 'figuring out' what to do." Hypotheses about the components of intelligence range from a single, unitary competence that influences almost all that we do (and that each child or adult possesses to a greater or lesser degree), to unique collections of particular talents and skills that exhibit little overlap, to hierarchically organized sets of both general and specific abilities.

Most researchers agree that intelligence involves the performance of basic mental tasks, including perception of the environment, communication and language, and higher-level tasks such as reasoning, problem solving, and planning. Although traditional models emphasize the components or capacities of intelligence that are related to academic, educational, and occupational outcomes (i.e., verbal and mathematical abilities), various descriptions of intelligence also differentiate between *fluid intelligence* (i.e., the ability to reason and solve problems in new situations) and *crystallized intelligence* (i.e., the skills and knowledge acquired through education and experience) (Nisbett et al., 2012; Sternberg, 2003); include capacities for music, art, mechanics, and relationships (Gardner, 1993; Siegler, 2003), and/or emphasize the constructs of *practical intelligence* and *creativity* (Sternberg, 2006). In addition, mechanisms such as speed (or efficiency) of mental processing and working memory must be accounted for in models of intellectual functioning (Nisbett et al., 2012). Motivational aspects such as achievement mindsets, curiosity, and effort must also be understood (Dweck & Master, 2009; Haimovitz & Dweck, 2016; Kovas et al., 2015).

Cognitive and Intellectual Functioning across Development

To understand the particular pathways displayed by children with intellectual developmental disorder and the ways in which learning is accomplished for typically developing children and compromised for children with learning disorders, we must examine both **cognitive development**, or general age-related trends, and **intellectual development**, or individual differences observed across children at all ages. With respect to cognitive development, we need to take into account the components and processes of cognition (e.g., perception, attention, memory, concept formation, and mental rules and representations). As described in Chapter 2, contemporary research focuses on the dynamic interaction of tasks, contexts, and emotional states that influence cognition, as well as interpretations of the *how* and *why* of children's thinking and learning.

Current models of cognition emphasize evolutionary contexts, experience–expectant learning (an example of a brain–behavior relation), and both qualitative and quantitative change across development (Newcombe, 2011; Pennington, 2015). In general, it is well accepted that there is steady, linear progress in cognitive achievements, with occasional reorganizations, or qualitatively distinct "developmental leaps." For example, children learn and remember more information as they age, but they also become faster and more efficient at manipulating that information; the pace of progress is greater through the preschool and elementary school years and slows somewhat during adolescence.

With respect to intellectual development, there is a general emergence of intellectual functioning, as well as specific patterns of strengths and weaknesses in both components and mechanisms, reflected in individual differences in various intellectual domains (Bjorklund, 2013). Components and mechanisms include factors such as reasoning, complex problem solving, and speed of processing and learning. Patterns of individual differences (e.g., some children displaying higher levels of intelligence and other children displaying lower levels) appear relatively stable from four or five years of age through adulthood, with growth, change, and decline observed throughout the lifespan (Deary, 2014).

One especially important outcome related to cognitive and intellectual development is academic achievement. A recent developmental cascade model of cognitive functioning identified a number of early emerging cognitive abilities as the "building blocks" for later school achievement (Bornstein, Hahn, & Wolke, 2013). In this model, various child, parent, and environmental factors influenced the cascading effects, and these types of factors are discussed in more detail in the following section.

Genes, the Brain, and the Environment

There is overwhelming evidence that both heredity and the environment contribute to children's cognitive and intellectual development (Haworth et al., 2010; Pennington, 2015; Scarr, 1997, 1998). Data from numerous twin, family, and adoption studies establish that genes influence about 50% of the variation in intelligence. As noted in previous chapters, with a complex psychological trait such as intelligence, we expect—and, in fact, observe—that numerous genes are involved in its development and that the contribution of any single gene is relatively small. These genetic effects on intelligence increase with age. With gene–environment transactions, "as children select and evoke experiences in line with their genetic predispositions, and as these experiences, in turn, stimulate their cognitive development, early genetic influences on cognition will become amplified" (Tucker-Drob, Briley, & Harden, 2013, p. 351; also see Figure 6:1).

This model of genetic influence on intelligence does not always play out in the same manner for all children.

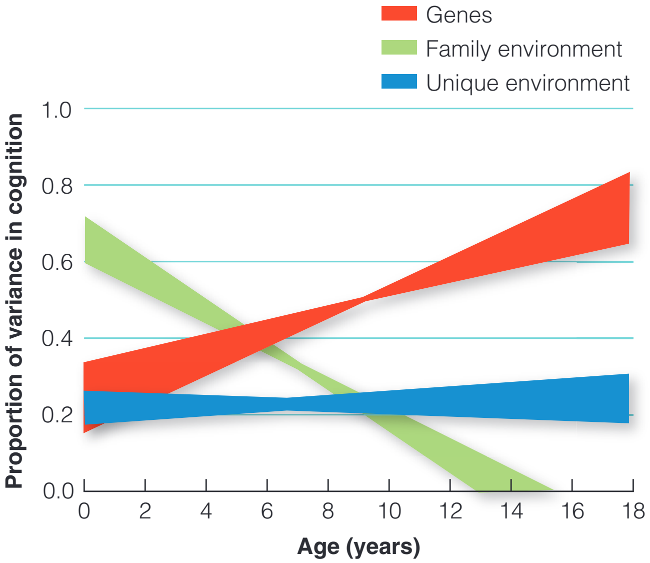

FIGURE 6:1 Genetic and environmental influences on cognition across development.

Source: Genetic and Environmental Influences on Cognition Across Development and Context The online version of this article can be found at: http://cdp.sagepub.com/content/22/5/349. DOI: 10.1177/0963721413485087

In fact, research on socioeconomic status (SES) indicates that genetic influences on intelligence "are suppressed by socioeconomic disadvantage" and "maximized by environmental opportunity" (Tucker-Drob et al., 2013, p. 353). In other words, "children living in poverty do not get to develop their full genetic potential" (Nisbett et al., 2012, p. 134). Children who live in supportive, enriching environments are able to seek out and respond to positive learning experiences from birth onward. These child–environment processes lead to a wide variety of individual outcomes, so genetic differences can be observed. Children who live in impoverished environments are not able to easily search out or receive the kinds of learning experiences available to children from middle- and high-SES backgrounds, so genetic differences are masked by environmental disadvantage. These intelligence-SES patterns are examples of the gene-by-environment effects described in Table 2:2 in Chapter 2.

Much of the genetic influence on intelligence is associated with brain structure and function. Multiple brain regions (including the prefrontal cortex) are involved. Synapse production and synaptic pruning (interacting with environments) and myelination link brain development with cognitive development (Pennington, 2015). Connectivity among brain regions is also linked to intelligence and becomes fine-tuned over development (Johnson et al., 2015; Nisbett et al., 2012; Pennington, 2015). Differences in the dopamine system have been hypothesized to underlie the tendency to be imaginative, curious, and intellectual (DeYoung et al., 2011).

The child's immediate and larger environments also have considerable impact. Prenatal and postnatal environments are very important. Maternal drug or alcohol use or exposure to toxins negatively affects intelligence. Parental factors such as education, interest in academics, and beliefs about children's intelligence have all been associated with more positive intellectual outcomes (Nisbett et al., 2012). Many researchers have described within-family, nonshared effects on children's intelligence related to siblings' differing expectations, roles, and birth order (Nisbett et al., 2012).

As noted in the previous section on genetic influence, the most frequently mentioned factor in the larger environmental milieu is poverty, with damaging effects on intellectual development and academic achievement. According to Siegler (2003, p. 316), "poverty exerts its negative effects on intellectual development through several mechanisms: inadequate diet, lack of timely access to health services, parental preoccupation with other problems, and insufficient intellectual stimulation and support in the home." In contrast, excellent home and educational environments provide a foundation for intellectual and academic success. The home environments of very young children, for example, might include exposure to rich vocabularies, and early school experiences might involve high-quality kindergarten and first grade teaching (Leffel & Suskind, 2013; Nisbett et al., 2012). Interventions involving early enrichment promote typical development by preventing adverse impacts on cognitive ability and other characteristics (Gottlieb & Blair, 2004; Nisbett et al., 2012). How our society addresses these kinds of inequalities and provides (or fails to provide) effective interventions are ethical issues with far-reaching consequences.

Learning, of course, depends on intellectual and cognitive development. With respect to academic tasks, there are a myriad of learning-related capacities and skills, each with its own maturational and practice timeline (Brocki & Bohlin, 2004; Pennington, 2015). The development of self-regulation is critical (Eisenberg, Valiente, & Eggum, 2010; Nisbett et al., 2012). These capacities and skills underlie children's expected mastery and progress in early school skills, such as reading and mathematics, with individual variations in the timing and nature of children's learning (Li-Grining, Votruba-Drzal, Maldonado-Carreno, & Haas, 2010). In addition, there are well-documented changes in the ways in which children appraise their cognitive and academic abilities, with impacts on motivation, persistence, and later academic achievement (Dweck & Master, 2009; Haimovitz & Dweck, 2016).

The sociocultural context of academic pathways, with an emphasis on cultural values related to education and achievement, must be considered. For instance, studies of immigrant families and American Indian and Alaska Native youth illustrate the ways in which parents and communities, as well as factors such as SES and access to quality educational practices, influence children's academic outcomes (Marks & Coll, 2007; Mitchell, Croy, Spicer, Frankel, & Emde, 2011). Across all cultures and backgrounds, children's learning occurs in the context of transactions among individuals (children, parents, teachers), settings (home, school, child care), and institutions (communities, schools, governments).

One last point about environmental factors, in the context of culture and global awareness: Our understanding of children's intelligence across countries and continents requires consideration of the "Flynn effect," the gradual increase in IQ scores over many decades (Flynn, 1987, 2007). With data on IQ trends in 30 nations, researchers suggest that the Industrial Revolution (and the modernization that followed) combined with a need for more advanced skills led to higher levels of intelligence in many countries. In addition, better nutrition, better health, and better schooling continues to contribute to large-scale gains in intelligence (Nisbett et al., 2012; Pennington, 2015; Sternberg, 2003).

Intellectual Developmental Disorder

Intellectual developmental disorder (also known as *intellectual disability*) involves deficits in **intellectual functioning** and deficits in **adaptive behavior**, both of which emerge early in development (American Association on Mental Retardation (AAMR)/American Association on Intellectual and Developmental Disabilities (AAIDD), 2002; American Psychiatric Association, DSM-5, 2013) (see Table 6:1). Deficits in intellectual functioning are evaluated with respect to the range and distribution of intelligence (IQ) scores in typically developing individuals (see Figure 6:2). One of the most important distinctions related to the clinical presentation of intellectual developmental disorder is level of severity. *Mild, moderate, severe,* and *profound* levels of severity indicate the degree of impairment in adaptive functioning. According to the American Association on Intellectual and Developmental Disabilities (AAIDD) and DSM-5, adaptive functioning refers to how well an individual negotiates everyday tasks and challenges in conceptual, social, and practical domains. Some children with poor adaptive functioning exhibit significant problems with basic activities of daily living, such as getting dressed and maintaining hygiene; others do well with basic tasks but struggle with more complex activities, such as performing household chores or managing finances.

TABLE 6:1 Intellectual Disability (Intellectual Developmental Disorder): Summary of DSM-5 Diagnostic Criteria

A. Deficits in intellectual functioning including general reasoning, problem solving, abstract thinking, and academic learning, as evidenced by functional assessment and individual intelligence testing.

B. Deficits in adaptive functioning resulting in inability to meet age-normed developmental expectations in areas such as personal independence, communication, and social behavior. Ongoing support needed in one or more activities of daily living across multiple settings, including home, school, work, and community.

Although both the DSM-5 and AAIDD conceptualizations of intellectual developmental disorder recognize the interdependent nature of intellectual and adaptive

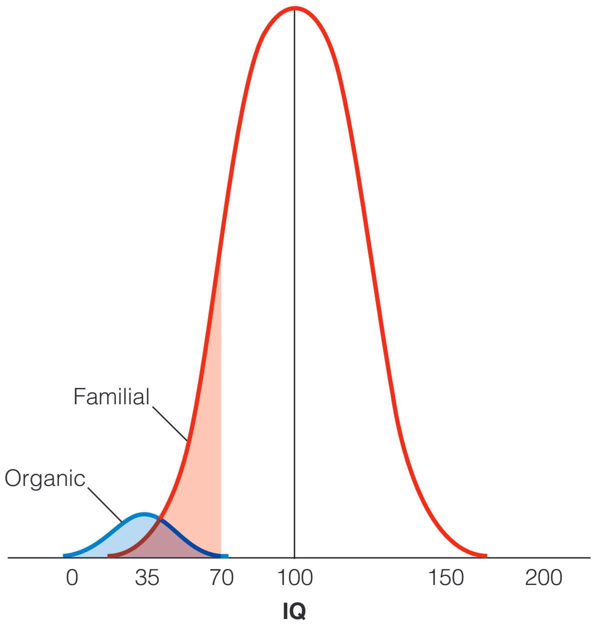

FIGURE 6:2 Bimodal distribution of IQ scores.

Source: From E. Zigler & R. M. Hodapp, "Understanding Mental Retardation," p. 73 (New York, NY: Cambridge University Press, 1986). Copyright © 1986 Cambridge University Press. Reprinted with the permission of Cambridge University Press.

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BOX 6:1

The Child in Context

Changing Names, Changing Stigma?

The names that professionals and laypeople use to describe disorders and disabilities provide important information about historical and current attempts to balance scientific knowledge and the social construction of mental illness. Over the years, the terms *moron*, *idiot*, *imbecile*, *changeling*, and *feebleminded* have been used to refer to individuals with particular kinds of intellectual and adaptational limitations. More recently, descriptive concepts such as *mild*, *moderate*, *severe*, and *profound mental retardation* have been replaced by terms such as *intellectual developmental disorder* and *intellectual disability.* Because the language we use depends, in part, on time and context, we must be careful about assumptions related to the similarity of underlying conceptualizations. In some important ways, what we identify and understand about intellectual developmental disorder is the same across generations; in other equally important ways, however, what we identify and understand is very, very different.

Still, a few general trends emerge. First, with every new name, we see an attempt to clarify the essential nature of a specific psychopathology (Schalock, 2011; Wehmeyer, 2013). Each attempt takes place within a specific historical milieu and has a variety of functions, including selecting appropriate interventions, designing prevention programs, and assigning each individual some status reflecting his or her moral, legal, and social standards. The powerful roles of religion, class, race, and gender that are associated with these functions remain to be fully explored and insistently challenged (Goodey, 2001; Stainton & McDonagh, 2001). We also must acknowledge the impact of grassroots movements by individuals, families, and advocates to replace the term *mental retardation* with *intellectual disability* in official U.S. departments and regulations (Ford, Acosta, & Sutcliffe, 2013).

The second trend involves the rethinking of the typological approach to intellectual developmental disorder (Gelb, 1997; Smith, 2002). That is, we see a clear shift in our understanding from (1) an emphasis on the distinction between normal and abnormal, with a focus on deficits or defects with the person; to (2) an emphasis on the continuity between typical and atypical, with a heightened appreciation of "people with very diverse needs and characteristics" (Smith, 2002, p. 64). Wehmeyer (2013, p. 123) argues that the term *disability* calls attention to the "fit between the person's capacities and the context in which the person is to function."

The third trend involves the attempt to address the stigma that is quickly attached to terms used for diagnosis. Whether we name a disorder in order to segregate, protect, or treat struggling individuals, the names that we use often become pejorative words used to mock and ridicule vulnerable persons (Gelb, 2002; Lyle & Simplican, 2015). Remember how awful it was (and is) to be called a "retard," in or out of school. Many have long argued that the label *mental retardation* should be abandoned for a more descriptive and more general label. And, in DSM-5, the terms *intellectual disability* and *intellectual developmental disorder* replace *mental retardation*. The new label allows an increasingly accurate, less stigmatizing approach to understanding and treating the disorder in children, adolescents, and adults. "Of course, it's not just how the construct is understood that is important, it is how people so labeled are both perceived and perceive themselves" (Wehmeyer, 2013, p. 125). It is up to all of us to forcefully counter ongoing misconception and prejudice and support all individuals' rights to dignity, pride, and well-being.

functioning, as well as multiple etiologies and outcomes, the AAIDD emphasizes a more holistic perspective. In this view, intellectual developmental disorder is not a physical or mental disorder, but rather a developmental disability that involves significant limitations, both in intellectual functioning and in adaptive behavior leading to impaired conceptual, social, and practical skills. Each area of dysfunction includes a corresponding description of the support necessary for maximizing the individual's well-being: *intermittent, limited, extensive,* or *pervasive support*. Rather than emphasizing the degree of deficit, the AAIDD emphasizes the possibility of adaptation. Indeed, the AAIDD model describes several domains of functioning that should be considered in addition to intellectual and adaptive domains; these include health, participation, and context (Schalock, 2011). Whether the definition of intellectual developmental disorder emphasizes deficits or supports, it is important to acknowledge the impact that the actual name of a disorder or a disability has on individuals who are diagnosed, on family members, and on society (see Box 6:1).

The Case of Katherine

> Katherine is eight years old, the fourth of seven brothers and sisters, but her mother, Mary, always refers to her as "my baby, because she never fusses." Mary and her family live with her mother in the

cramped three-bedroom apartment where Mary grew up. She dropped out of high school when she became pregnant with her first baby at age 15. Katherine's grandmother cleans houses for a living, and Mary cares for the children, who range from 2 to 14 years of age. Katherine's father, Philip, is a food services worker at the local hospital, but he only infrequently sees the children.

When Katherine neared the end of first grade, Mary was surprised to hear her teacher's concern that she wasn't making adequate progress at school. Katherine's three older brothers had been a handful, with each of them experiencing discipline problems ahead of Katherine in the same public school. Mary had noticed that Katherine seemed to lag a little behind her brothers in learning to walk and talk, but she just assumed that she would eventually catch up. Mary didn't usually make it to parent nights at school, but she had heard no bad reports on Katherine from the kindergarten teacher, and she was always pleased by how Katherine played so well with her younger sisters. But the teacher told Mary that Katherine wasn't making progress in letter and word recognition, had a hard time following directions, and seemed to be getting more and more anxious and disconnected from the other children as the year went on. It didn't help that some of the other children had started to tease Katherine about her reading struggles.

The school psychologist's assessment of Katherine revealed that she had an IQ of 65 and adaptive skill deficits in the sensorimotor, communication, and self-help areas. Katherine's functioning in all of those areas was more than two standard deviations below the norm for her peers, which led to her diagnosis of intellectual developmental disorder of mild severity.

An Individualized Education Plan (IEP) was developed in which Katherine remains in the regular classroom for about half the day, with the support of a teacher's aide to guide her work more closely. She also leaves the classroom periodically to participate in specialized classes dedicated to more intensive work on her reading, fine motor, and auditory processing abilities. The IEP contains very specific goals in each skill area, along with a timetable for evaluating Katherine's progress toward each of the goals several times a year. Like any child, Katherine has individual strengths and weaknesses in different areas, and the learning goals are continually readjusted over time to reflect her differential rates of progress. Katherine's classroom teacher has also adopted a curriculum unit that addresses disability stereotyping and helps the other children in the class to both understand and be more supportive of Katherine.

The school psychologist met with Mary to help her better understand the nature of Katherine's disability and her future expectations. She explained that Katherine's development in many ways follows the same sequence and growth pattern as other children, but progresses more slowly and will not continue as far in terms of her ability to think abstractly and process complex information. As she matures, her caregivers will need to pay increasing attention to the level of support that Katherine requires, in line with the standards established by the AAIDD (2002). It is likely that Katherine's necessary support level as she moves into adulthood will fall somewhere between intermittent (e.g., as needed, such as following a job loss or health crisis) and limited (e.g., consistent support in areas like vocational training and housing assistance that varies in intensity). ■

Taking into account various definitions of intellectual developmental disorder and the difficulties associated with accurate calculations, epidemiological estimates of the prevalence of intellectual developmental disorder range between 1% and 2% of the population (Maulik, Mascarenhas, Mathers, Dua, & Saxena, 2011; Tylenda, Barrett, & Sachs, 2014). Most individuals (85%) with intellectual developmental disorder are diagnosed with mild levels of severity, requiring intermittent support (as described here in the case of Katherine). Approximately 10% are diagnosed with moderate levels, requiring limited support; 3% to 4% with severe levels, requiring extensive support; and 1% to 2% with profound levels, requiring pervasive support. Intellectual developmental disorder is observed much more frequently in boys (Nisbett et al., 2012).

Zigler's Developmental Approach to Intellectual Developmental Disorder

Several of the most important and affirming proposals about children with intellectual developmental disorder were put forth by Edward Zigler (1969, 1971), who described two groups. The first group included individuals with mild forms of intellectual disability, reflecting the low end of the normal distribution of intelligence in the general population. Because this type of intellectual disability appeared to run in families, it was (and still is) often called *familial intellectual developmental disorder*. The second group included individuals with more severe forms of intellectual disability, usually the result of pathological processes such as genetic disorders.

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Zigler's developmental approach asserted that the majority of children with intellectual developmental disorder (i.e., children with mild forms of disability) display developmental pathways that are similar to children without intellectual developmental disorder. Although delayed in their mastery of most motor, cognitive, emotional, and social tasks, and stopping short of the eventual achievements of their typically developing peers, children with intellectual developmental disorder exhibit the same kinds of sequences and coherent growth that are characteristic of most children. That is, children with intellectual developmental disorder develop slowly, but in organized ways. Broadening his concern beyond deficits and dysfunctions, Zigler also emphasized a holistic perspective, the critical need to understand patterns of strengths and weaknesses, and the motivations and personalities of children with intellectual developmental disorder (see also Cicchetti & Pogge-Hesse, 1982). The developmental approach has influenced decades of research and clinical work (Burack, Russo, Flores, Iarocci, & Zigler, 2012; Iarocci & Petrill, 2012).

Genotypes and Behavioral Phenotypes

A number of models have focused on identifying and understanding children with intellectual developmental disorder by grouping them according to etiology, with much attention focused on various **genotypes**—the underlying genetic causes—associated with intellectual developmental disorder. As described in Chapter 2, research on genetic and epigenetic factors has increased exponentially in recent years, with much of the work focused on neurodevelopmental disorders, including intellectual developmental disorder (Kiser et al., 2015; Pennington, 2015). These genetic syndromes are medical diagnoses rather than psychiatric or psychological categories; the genotype assumption is that different etiological explanations correspond to differences in specific dysfunction and disability and differences in the course of intellectual developmental disorder. Hundreds of individual genetic variants (e.g., mutations, duplications, deletions) and major chromosome abnormalities are linked with specific forms of intellectual developmental disorder. Most individuals with these identifiable genetic etiologies display more severe forms of disorder (Kiser et al., 2015; Nisbett et al., 2012).

The related construct of **behavioral phenotypes** emphasizes the likelihood that a child will display a particular pattern of difficulties given a particular genetic etiology. In other words, most children—but not all children—with a particular genetic background will display similarities related to physical characteristics, cognitive and linguistic profiles, perceptual skills and deficits, socioemotional patterns, and overall outcomes (Hodapp & Dykens, 2005). Genotype-phenotype research goals include the descriptions of both general and specific patterns of deficits and dysfunction (Pennington, 2015). One example of a distinctive behavioral phenotype is the extreme eating behaviors observed in individuals with Prader-Willi syndrome (and not in other individuals with other genetically influenced disorders). Another example of a behavioral phenotype involves the more commonly noted patterns of cognitive deficits, emotion regulation difficulties, and impulsivity in children with many different genetic etiologies (Kiser et al., 2015).

Down Syndrome

Three brief descriptions of genetic syndromes illustrate this genotype-phenotype classification approach to intellectual developmental disorder. **Down syndrome**, caused by an extra chromosome 21 (i.e., trisomy 21), is among the most widely known genetically influenced forms of intellectual developmental disorder (Bivina, Moghaddam, & Wardinsky, 2013; Hazlett, Hammer, Hooper, & Kamphaus, 2011). The vast majority of cases of Down syndrome are nonfamilial—that is, Down syndrome does not run in families (Pennington, 2015). "The genetic etiology of Down syndrome involves a whole extra chromosome (and an extra dose of the gene products of all its genes), so tracing the developmental pathways from genotype to phenotype is much more difficult in Down syndrome than in fragile X syndrome or Williams syndrome" (Pennington, 2015, p. 1030).

As with many forms of intellectual developmental disorder, there are accompanying physical characteristics, including microcephaly, distinctive facial features, heart problems, and poor muscle tone. Intellectual challenges almost always involve language difficulties, with expressive speech more problematic than receptive speech (Abbeduto, Warren, & Conners, 2007). Visual short-term memory is often a relative strength. In contrast to many other genetic etiologies, there is a wide range of intellectual disability (Pennington, 2015). With respect to personality and psychopathology, parents often report that their children with Down syndrome are happy and outgoing; indeed, Down syndrome is sometimes referred to as "Prince Charming" syndrome (Dykens, 2000). Compared to others with intellectual developmental disorder, children with Down syndrome display relatively few maladaptive behaviors during childhood, although both internalizing and externalizing symptoms occur in some children (Fidler, 2006; Fidler, Most, Booth-LaForce, & Kelly, 2006).

Williams Syndrome

Williams syndrome, caused by a microdeletion on chromosome 7, is associated with its own distinctive pattern of intellectual developmental disorder (Mervis & John, 2010; Pennington, 2015). Williams syndrome has a lower prevalence than Down syndrome or fragile X syndrome. Similar to Down syndrome (and distinct from fragile X syndrome), Williams syndrome does not run in families (Pennington, 2015). Compared to fragile X syndrome, where one gene product is affected, multiple gene products are affected in Williams syndrome, which again is similar to Down syndrome (Pennington, 2015).

Williams syndrome is characterized by deficits in general cognitive function and visual–spatial skills and relative strengths in language and music domains, although these relative strengths are still below age-typical performance (Mervis & Becerra, 2007; Pennington, 2015). Even though the language of children with Williams syndrome is less impaired compared to children with other types of intellectual developmental disorder, many studies provide data suggesting that there are specific language difficulties that have an impact on reading and require educational interventions (Mervis & John, 2010). Children with Williams syndrome exhibit “sparkling dispositions” and “a remarkable and contagious zest for life” (Dykens, 2006, p. 190). That said, social disinhibition is a frequent concern for children with Williams syndrome, who “crave attention and interaction” and who frequently display overly friendly and talkative behaviors (p. 190). Children with Williams syndrome usually demonstrate a special facility for facial and emotion recognition and are known for their displays of empathy (Pearlman-Avnion & Eviatar, 2002). The most common symptoms of psychopathology include numerous fears and anxieties (Dykens, 2003).

Individuals with Williams syndrome are more engaged and accomplished than individuals with other forms of intellectual developmental disability, and similar in many ways to typically developing individuals (Bhatara, Quintin, & Levitin, 2012). Many individuals with Williams syndrome display a particular affinity for music. Levitin et al. (2004, p. 238) provide this example of the experience of music: “As the parent of a WS child reported, her daughter began weeping after a couple of notes were played at a Mozart concert. The girl’s reaction was so strong that she left the concert and after returning, once again burst into tears. After hearing a more uplifting Mozart song some months later, she explained to her mother, ‘there are two kinds of Mozart: the kind that hurts and the kind that does not hurt.’”

Fragile X Syndrome

Fragile X syndrome, caused by atypical gene expression on the *FMR1* gene, is the most common type of inherited intellectual developmental disorder in boys, affecting 1 in 4,000 boys and 1 in 8,000 girls; it is seen in all racial and ethnic groups. Fragile X syndrome has “the simplest genetic etiology . . . because it is a single gene disorder,” in which one gene becomes inactivated via methylation; “nonetheless, it has a complex behavioral phenotype, illustrating once again that the developmental pathways from etiology to cognition and behavior are complicated.” Fragile X syndrome is an “epigenetic disorder because it results from abnormal gene expression rather than a mutation” (Pennington, 2015, p. 1031). Boys, who have only a single fragile X gene, are likely to be more severely affected and are more frequently diagnosed with moderate intellectual developmental disorder. Girls usually are diagnosed with mild intellectual developmental disorder. There are fewer physical characteristics of fragile X syndrome, although some babies do have large head circumferences, somewhat unusual facial features, and loose joints (Koukoui & Chaudhuri, 2007; Schwarte, 2008). Speech and communication difficulties underlie the fragile X cognitive profile (Abbeduto, Brady, & Kover, 2007).

Psychopathological symptoms associated with fragile X syndrome range from social difficulties to autism; boys are more likely to experience severe behavioral problems such as high activity, poor attention, and low adaptability (Dykens, 2000; Roberts, Boccia, Hatton, Skinner, & Sideris, 2006). With 20 years of research following the identification of the *FMR1* gene, fragile X syndrome is the “best understood” genetic syndrome associated with intellectual disability (Pennington, 2015).

Researchers describe several benefits to an approach emphasizing genetic etiology. The most important of these benefits is the potential for prevention and early diagnosis. Taking into account different patterns of strengths and weaknesses, treatments might be able to be more effectively specialized (Fidler, Hodapp, & Dykens, 2002; Hodapp & DesJardin, 2002). Others note the drawbacks to this kind of approach. These include the possibility that with increasing

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For most children with developmental delays, feelings of individual competence and social connection are key to a positive and resilient developmental trajectory.

numbers of subtype classifications (numbering now in the hundreds), clinicians and others may overlook key similarities among children with intellectual developmental disorder, with negative implications for both diagnosis and intervention (Burack, 1997; Pennington, 2015). Given the current variety of outcomes for individuals with the same etiologies, Pennington (2002, p. 250) suggests that for "any psychopathology, there is no doubt that etiological definitions will help focus medical interventions, but short of a medical cure, we will also need behavioral definitions to guide treatments."

So far, our emphasis has been on describing several genotypes associated with intellectual developmental disorder, each of which is usually associated with a diagnosis of moderate to severe intellectual developmental disorder. We must keep in mind that the majority of cases of children diagnosed with intellectual developmental disorder are, in fact, diagnosed with mild intellectual developmental disorder, as the case of Katherine illustrates. Children with mild intellectual developmental disorder are not readily identified by genetic assays, physical characteristics, unique language or social presentations, or other sets of difficulties (Iarocci & Petrill, 2012). These children must not be overlooked; indeed, efforts to identify and support these children must be renewed and reinvigorated.

Etiology

A number of prenatal, perinatal, and postnatal risk factors associated with intellectual developmental disorder have been identified (Schalock, 2011; Tylenda et al., 2014; also see Table 6:2). We have already summarized information related to the specific genetic etiologies associated with particular forms of intellectual developmental disorder. These more severe forms occur independent of family and sociocultural risk factors (Iarocci & Petrill, 2012).

TABLE 6:2 Examples of Prenatal, Perinatal, and Postnatal Risk Factors in Intellectual Disability

Prenatal:
- Biomedical: Chromosomal disorders, metabolic disorders, transplacental infections (e.g., rubella, HIV), exposure to toxins
- Social: Poverty, maternal malnutrition, domestic violence, lack of prenatal care
- Behavioral: Parental drug use
- Educational: Parental disability without support, lack of educational opportunities

Perinatal:
- Biomedical: Prematurity, birth injury, hypoxia, neonatal disorders
- Social: Lack of access to birth care
- Behavioral: Parental rejection of caretaking, parental abandonment
- Educational: Lack of referral for interventions at hospital discharge

Postnatal:
- Biomedical: Malnutrition, traumatic brain injury, degenerative/seizure disorder, toxins
- Social: Lack of adequate stimulation, family poverty, chronic illness, institutionalization
- Behavioral: Child abuse/neglect, domestic violence
- Educational: Delayed diagnosis, inadequate early intervention, inadequate special education services; inadequate family support

Source: Schalock (2011).

With respect to genetic risk associated with mild (or familial) forms of intellectual developmental disorder, we refer back to the opening section of this chapter and the description of genetic and environmental influences on intelligence in typically developing children. In this section, we emphasize that for almost all children with mild forms of intellectual developmental disorder, there is "not just *one* but *several* genetic mechanisms and consequent brain processes which are disrupted" (Kiser et al., 2015, p. 285; italics in original). That is, "impairments in development do not occur in an isolated form but affect a multitude of critical stages during gestation, infancy, and early childhood," with escalating negative impacts on intelligence (p. 290).

Research connecting genetic influences with brain structure and function are focused on synaptic processes and connectivity. Atypical brain development is observed across all severities of intellectual developmental disorder (Kiser et al., 2015; Pennington, 2015). Gene-by-environment processes are hypothesized to work in similar ways for individuals at the low end of the distribution of intellectual functioning (with IQ scores just above the cutoff for intellectual developmental disorder) and individuals with mild forms of intellectual developmental disorder (Iarocci & Petrill, 2012).

Family patterns of intellectual developmental disorder help illustrate these different etiological explanations. For families with a child with mild intellectual developmental disorder, we expect that other children in the family, who share many of the same genes as their parents and their sibling with intellectual developmental disorder, would display below-average intelligence, and they do (Iarocci & Petrill, 2012; Plomin & Kovas, 2005). In contrast, for families with a child with intellectual developmental disorder associated with a specific genetic error, the genetic variant is not part of a parent's genetic makeup passed on to other children; in these families, the siblings of the affected child display more typical intellectual functioning (Pennington, 2002).

As noted in earlier sections, environmental factors affect the development of some types of intellectual developmental disorder. Family instability and adversity are associated with negative impacts on intelligence (Nisbett et al., 2012). Atypical levels of cortisol, a consequence of chronic stress, may negatively affect early brain structure and function and cognitive outcomes (Suor, Sturge-Apple, Davies, Cicchetti, & Manning, 2015). Although low SES is an important risk factor, keep in mind that the vast majority of children from low-SES backgrounds do not display intellectual developmental disorder (Iarocci & Petrill, 2012).

Developmental Course

Given the various etiologies, marked differences in children's developmental trajectories and outcomes are expected and observed (Pennington, 2015; Tylenda et al., 2014). In general, poorer prognoses are associated with identifiable genetic etiologies. Not only are these genetic etiologies related to more severe intellectual developmental disorder, but many are also associated with life-threatening physical disease and dysfunction. For many of the most impaired children, outcomes may include institutionalization, total dependence on others for care, and briefer lives. More positive health outcomes are observed in children with mild or moderate degrees of intellectual developmental disorder. Common medical conditions include epilepsy, heart problems, sensory disorders, deafness, and physical abnormalities. Although both immediate and long-term growth and health are often compromised, medical advances have made a lifespan approach to intellectual developmental disorder essential (Hodapp & Burack, 2006; Tylenda et al., 2014). For all these children, keeping in mind the holistic approach favored by Zigler and others, we can examine the course of disorder as it plays out in various domains of development and pay meaningful attention to individual strengths as well as weaknesses.

Intelligence, Language, and Communication

Children with intellectual developmental disorder exhibit different trajectories of intellectual development relative to the rate and timing of growth for typically developing children (Pennington, 2015). Across all neurodevelopmental disorders, there is "a slower rate of cognitive development, and often an earlier plateau" (Pennington, 2015, p. 1005). In addition, children with intellectual developmental disorder show "less solid, more 'fragile' developments of their highest stages" (Hodapp & Zigler, 1995, p. 311). These changes are likely tied to innate characteristics but are also influenced by the interaction of the child's abilities and environmental factors. For many children with intellectual developmental disorder, cognitive and linguistic profiles of strengths and weaknesses also change over time, with strengths becoming stronger and weaknesses becoming weaker (Hodapp & Burack, 2006; Pennington, 2015). Specific patterns of language and communication are observed for children, adolescents, and adults with Down syndrome (Chapman & Bird, 2012), with fragile X syndrome (Abbeduto, McDuffie, Brady, & Kover, 2012), and with Williams syndrome (Mervis, 2012).

General outcomes related to academic skills vary by severity, with children with mild intellectual developmental disorder displaying sixth-grade academic skills by late adolescence and children with moderate intellectual developmental disorder displaying second-to fourth-grade skills. Attention and motivational deficits may complicate the development of these skills (Tylenda et al., 2014). Academic difficulties may increase in adolescence, as the gap widens between students with and without intellectual disabilities (Tylenda et al., 2014). Children with more severe and profound levels typically display very limited language. For many children with intellectual developmental disorder, deficits in language and communication skills are associated with increased behavior problems (Tylenda et al., 2014).

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BOX 6:2

The Child in Context

Teachers' Attitudes toward Inclusion

There is a complicated historical and legal background to the discussion of the inclusion of children with special needs into regular classroom settings. In general, we see a move from demands for the "least restrictive environments" for children with intellectual developmental disorder to more recent efforts that emphasize both inclusion and integration for children and educational curricula. With a diversity of parent and teacher beliefs and attitudes about inclusion, research evidence is necessary to make informed and valued policy decisions (Kavale, 2002; Kavale & Forness, 2000).

Many discussions of inclusion presume that successful outcomes depend, in part, on teacher attitudes, and reviews of the literature suggest that teachers have positive attitudes about inclusion and integration. However, their attitudes and beliefs are influenced by the nature and severity of children's special needs, as well as their own needs for personal and educational support for their work (Avramidis & Norwich, 2002; Dessemontet, Morin, & Crocker, 2014).

Teachers' positive attitudes are countered by their lack of confidence in their ability to manage classrooms with special needs children (Avramidis, Bayliss, & Burden, 2000). This lack of confidence may underlie their reluctance to fully embrace the notion of inclusion. Many investigators have observed that knowledge about specific disabilities, along with training, experience, and collaborative work with other teachers, have an impact on teachers' perceived competence (Avramidis et al., 2000; Greenway, McCollow, Hudson, Peck, & Davis, 2013). Increasing contact with children with intellectual developmental disorder is also associated with positive attitudes toward inclusion (Dessemontet et al., 2014). It seems clear that additional work still must be done to document both the benefits and costs related to inclusion for both children and teachers, that these efforts must include awareness of differences across culture and countries (Lee, Tracey, & Barker, 2015), and that the acceptance and translation of policy into practice is ongoing (Carrington & Elkins, 2002).

One particularly relevant environmental variable is education. In the United States, the Individuals with Disabilities Education Act (IDEA) mandates diagnostic, educational, and support services from birth to age 21, with individual education plans developed with input from parents, teachers, and mental health professionals. Educational approaches have changed over previous decades and now emphasize inclusion of children with developmental disabilities in age-appropriate classrooms. Success in these classrooms depends on many variables, and behavior difficulties are often the main reason for lack of success in mainstream placements. Inclusion strategies designed to enhance children's success focus on better teacher training and parent participation, increased classroom resources, and more extensive supports for student learning (see Box 6:2).

Social, Emotional, and Personality Development

The general course of adaptive functioning is variable. Some groups of children with intellectual developmental disorder show improvements over time, others display up-and-down patterns of adjustment, and still others exhibit declines (Hodapp & Burack, 2006). For all groups, however, the emphasis remains on supporting personality development and functioning (Zigler, 1999; Zigler & Bennet-Gates, 1999) and achieving a positive quality of life (Dykens, 2006; Schalock, 2000). As we have already discussed, Zigler's "approach was aimed at understanding the 'whole child' with intellectual developmental disorder, in all of that child's psychological complexity" (Hodapp & Zigler, 1995, p. 316). Research on emotion, attachment, and play in children with Down syndrome, for example, has long supported Zigler's position that children with intellectual developmental disorder exhibit basic emotion skills, appreciate humor, and experience complex emotional relationships (Cicchetti & Serafica, 1981; Motti, Cicchetti, & Sroufe, 1983; Reddy, Williams, & Vaughan, 2001). An appreciation of children's overall mix of emotion strengths and weaknesses is important (Kasari, Jahromi, & Gulsrud, 2012).

Children also display characteristic patterns of social competence and peer relationships, depending on their etiological backgrounds and surrounding environments (Rosner, Hodapp, Fidler, Sagun, & Dykens, 2004). Compared to typically developing children, for instance, children with intellectual developmental disorder appear more motivated to seek and obtain approval and positive reinforcement from others and to look more frequently to others for information and guidance (Hodapp & Zigler, 1995). Self-esteem and perceived competence develop over time in numerous interactions with parents, teachers, and environments (Tylenda et al., 2014). Friendships are clearly important to many children with intellectual developmental disorder. Strained friendships and new difficulties may appear in adolescence, when social skills deficits become more pronounced (Tylenda et al., 2014).

With respect to leisure activities, etiology-associated patterns are again observed, with differences in the selection and practice of social activities, television and computer activities, musical activities, and physical activities (Buttimer & Tierney, 2005; Sellinger, Hodapp, & Dykens, 2006). With age, individuals with Down, Williams, and Prader-Willi syndromes all increase their participation in social activities; other increases and decreases in specific activities also were observed (Sellinger et al., 2006).

It is important to understand that children with intellectual developmental disorder are not just occupying themselves or following others' directives related to various activities. In many cases, selection and pursuit of specific activities appear to be related to a number of positive internal strengths (Dykens, 2006). Individuals with Williams syndrome, for instance, may be assisted in their drive for relationships to make safe, appropriate, and reciprocated overtures to others. Given their pleasure, skill, and deep engagement in music, they also may be encouraged, challenged, and supported in their musical journeys (Dykens, 2006).

Maladaptive Behavior and Comorbid Disorders

Depending on the etiology and severity of intellectual developmental disorder, estimates of maladaptive behavior patterns and comorbid conditions range widely (Dykens, 2000), with three to four times the risk for psychopathology in children with intellectual developmental disorder compared to typically developing children (Tylenda et al., 2014). For children diagnosed with mild intellectual developmental disorder, internalizing symptoms, such as anxiety and mood disturbances, and externalizing problems, such as oppositional defiant disorder and attention deficit hyperactivity disorder (ADHD), are frequently observed. For children diagnosed with more severe forms of intellectual developmental disorder, autistic symptoms and self-injurious behaviors are frequently reported. For many children, as noted previously, problematic behaviors are linked to communication difficulties; "the child's inability to describe discomfort leads to physical expression of pain and frustration" (Tylenda et al., 2014, p. 676).

Certainly, shared genetic and physiological vulnerabilities contribute to overlapping psychopathologies (Dykens, 2000; Pennington, 2015). But Dykens (2000) suggests that another reason that children with intellectual developmental disorder struggle in multiple ways is related to the nature of lower intellectual functioning. That is, children with intellectual developmental disorder generate fewer problem-solving strategies and have fewer cognitive resources, leading to unrealistic appraisals of tasks and abilities and less successful outcomes for a variety of intellectual and social challenges. Distress is likely, along with increasingly negative self-evaluation. Over time, particularly for children and adolescents with mild intellectual developmental disorder, anxiety, mood, and behavioral symptoms may exacerbate intellectual and adaptive functioning. In another negative cycle, physical aggression and destructive behavior may lead to increases in social isolation (Tylenda et al., 2014). These kinds of difficulties also increase the cost of care for children and adolescents (Einfeld et al., 2010).

Adult Outcomes

With emphases on quality of life and appropriate support for individuals with intellectual developmental disorder, we look to the future with hope. For some individuals with mild intellectual disabilities, leaving the academic- and achievement-focused school system leads to meaningful improvements in adaptation. These individuals often have the social and vocational skills to live and work independently (Tylenda et al., 2014). For individuals with moderate intellectual disabilities, increased support, supervision, and assistance in living and work are necessary. For individuals with severe and profound intellectual disabilities, extensive and around-the-clock assistance and supervision are required (Tylenda et al., 2014). Other predictable developmental challenges are observed as well. One of the most difficult challenges involves adult sexuality. Historically, both mental health professionals and the general public exhibited strong negative attitudes about sexual behavior in adults with intellectual developmental disorder; sexual freedom was rarely permitted (Kempton & Kahn, 1991; Rhodes, 1993). Sexuality is increasingly understood as an important aspect of life satisfaction for persons with intellectual developmental disorder. Sex education, therefore, is essential (Lumley & Scotti, 2001;

McConkey & Ryan, 2001). With respect to sexuality, we need to pay close attention to the possibility of victimization. Victimization also may occur connected to finances and other daily or life tasks (Tylenda et al., 2014). Finally, adult outcomes must include the multiple health disparities experienced by individuals with intellectual developmental disorder (Anderson et al., 2013).

The Role of the Family

As children with intellectual developmental disorder develop, so do their families. Many patterns of emotional response and eventual adjustment to babies with disabilities have been described, including sadness, denial, and anger (Tylenda et al., 2014). Different adjustments depend on family characteristics, the perception and meaning of the individual child, and the type of intellectual developmental disorder (Glidden, 2002; Hodapp, 2002). These factors may underlie what has been described as the "Down syndrome advantage"—the tendency for families of children with Down syndrome to cope better than families of children with other forms of intellectual developmental disorder (Hodapp, 2007). Significant impacts on family time, family activities, and family finances must be addressed, with support and ongoing resources for parents and siblings across child and adolescent development (Hewitt, Agosta, Heller, Williams, & Reinke, 2013; Tylenda et al., 2014). Specific supports target the transition from adolescence into young adulthood, related to autonomy, residence and work decisions, and the increasing involvement of external agencies (Carroll, 2013a; Tylenda et al., 2014). There are many different types of informal and professional support available, which may vary by culture or country.

Considering the many unique family contexts, many stress-and-coping models of ongoing family adjustment discuss both the positive and negative aspects of having a child with intellectual developmental disorder (Gerstein, Crnic, Blacher, & Baker, 2009). With respect to stress, for instance, there are difficulties associated with children's transitions and milestones. According to Hodapp and Burack (2006), families of children with intellectual developmental disorder attend to developmental issues (such as the first smile), chronological issues (such as entrance into school), and familial issues (such as a younger child achieving an academic or social goal before an older child) that may all be problematic; each event may lead to parents reexperiencing sadness. Chronic stress is related to poor health outcomes for parents (Miodrag & Hodapp, 2010; Seltzer, Floyd, Song, Greenberg, & Hong, 2011).

With respect to coping and resilience, many researchers have documented effective personal, familial, and environmental strategies (Al-Yagon & Margalit, 2012; Heiman, 2002). Some of the most positive rewards of having a child with intellectual developmental disorder that families describe include the joy that the child brings to the family, a sense of purpose, expanded personal and social networks, personal growth, and increased tolerance (Dykens, 2006). Overall, our understanding of parents and family members has shifted to "a more positive, coping perspective" (Hodapp & Zigler, 1995, p. 314).

The role of siblings of individuals with intellectual developmental disorder is a recent focus of investigation. Many siblings, early in their own development, report increased caregiving responsibilities, as well as expectations for greater responsibilities and additional support as they age (Hodapp, Urbano, & Burke, 2010; Seltzer, Greenberg, Orsmond, & Lounds, 2005). Siblings also report many benefits, including closer relationships with their siblings with intellectual developmental disorders; closeness was associated with their own well-being (Seltzer et al., 2005).

Assessment and Diagnosis

The American Association on Intellectual and Developmental Disabilities (AAIDD, 2002) report sets forth a number of assumptions that must be considered before a diagnosis of intellectual developmental disorder is made: "(1) limitations in present functioning must be considered within the context of community environments typical of the individual's age, peers, and culture; (2) valid assessment considers cultural and linguistic diversity as well as differences in communication, sensory, motor, and behavioral factors; (3) within an individual, limitations often coexist with strengths; (4) an important purpose of describing limitations is to develop a profile of needed supports; (5) with appropriate personalized supports over a sustained period, the life functioning of the person with intellectual developmental disorder generally will improve." With these assumptions in mind, we now examine the ways in which assessments and diagnoses are made.

Background Information

Medical and developmental histories are a key component of the assessment of intellectual developmental disorder. With the physical abnormalities and medical problems that are part of the overall clinical picture of several forms of intellectual developmental disorder, the identification of young children with more severe forms of disorders happens more quickly (i.e., after birth or within the first year). Delays in achieving motor-or language-related developmental milestones also lead to early diagnosis for some children. Children with more mild forms of intellectual developmental disorder are often assessed and diagnosed in the early school years, when expectations for academic performance increase (Tylenda et al., 2014). Across all ages, assessments for a variety of genetic and nongenetic etiologies may occur.

Clinicians must evaluate whether the presence of more specific developmental delays in speech, language, and reading account for intellectual and adaptive delays; in those cases, DSM-5 diagnoses such as Language Disorder or Speech Disorder would be appropriate. Physical concerns such as hearing difficulties or hearing loss also may have an impact on cognitive and language development.

Assessment of Intellectual Functioning

Standardized tests of intelligence, such as the Stanford-Binet or one of the Wechsler tests (e.g., the Wechsler Intelligence Scale for Children), are administered individually. In addition to a general evaluation of intellectual functioning, evaluations of particular cognitive processes may be included. It is important to note that these types of tests have both technical and nontechnical concerns. With respect to technical issues, there is one clear advantage to current instruments: “A score of 130 at age 5 means that a child’s performance exceeds that of 98% of age peers; a score of 130 at age 10 means exactly the same thing” (Siegler, 2003, p. 313). And, although they provide no information about the etiology or course of the disorder, scores on intelligence tests allow comparisons among groups of children with intellectual developmental disorder. Other assessment concerns involve a focus on formal academic skills and predicting school achievement in standardized tests, as well as the comparability of scores for children of different ethnic and racial backgrounds on traditional and nontraditional intelligence tests. Assessments of practical intelligence or creativity are not usually part of the comprehensive examination, although they might provide important information about the child’s overall intellectual functioning (Sternberg, 2003).

Assessment of Adaptive Functioning

Of the various standardized scales for assessment of adaptive functioning, the most common are the Vineland Social Maturity Scale and the AAIDD Adaptive Behavior Scale (Sparrow, Cicchetti, & Balla, 2005). These instruments are designed to measure basic skills in different developmental domains, including communication, self-care and health, social skills, and leisure and work, at various ages. They are usually completed by adults who know the child well. Given the somewhat variable course of intellectual and adaptive functioning for different groups of children with intellectual developmental disorder, repeat assessments throughout the growing years are important.

Following the collection of information on significant disabilities related to intellectual and adaptive functioning and the diagnosis of intellectual developmental disorder, additional assessment may be especially valuable. Information about maladaptive behaviors and psychopathology must be included. Specific behavioral assessments, socially oriented assessments, and personality measures such as happiness may provide a more complete picture of a whole child. Plans for supporting physical and psychological well-being depend on this more comprehensive approach.

Intervention

When considering intervention for children and adolescents with intellectual developmental disorder, two points are worth emphasizing. First, in general, we are not trying to treat the condition as we would most episodes of psychopathology. Rather, we are attempting to maximize the potential of the individual to meet developmental demands, while at the same time modifying the environment to better match the individual’s deficits and strengths. Consequently, mental health professionals, educators, and advocacy groups stress the importance of intervention plans that focus on specific person–environment contexts, target multiple points along the developmental continuum, and include the range of relevant social and educational systems within which the child functions (Shogren, Luckasson, & Schalock, 2014). These include, for example, early screening and identification, early intervention for the child and the family, appropriate school programming, and coordination of the various persons and agencies involved in the child’s care.

These types of quality-of-life interventions emphasize support and inclusion in family, school, and community environments so that individuals with intellectual disabilities can participate and thrive (Schalock, Verdugo, Gomez, & Reinders, 2016; Simplican, Kosciulek, & Leahy, 2015; Wehmeyer, 2013). Activities such as athletics, music, and scouting provide opportunities for

BOX 6:3

EMERGING SCIENCE

Ethical Issues in Prenatal Genetic Counseling

Advances in our abilities to detect abnormalities during prenatal development, including noninvasive testing techniques, are associated with a host of pragmatic and ethical issues for parents, medical and mental health providers, and society (Gekas et al., 2016; Minear, Alessi, Allyse, Michie, & Chandrasekharan, 2015). For parents, prenatal decision making is a multipart process. For some parents, genetic screening is routine; for others, it involves the first of many practical and moral decisions. Deciding what to do with available information, especially given the high false positive rates of some genetic screening techniques, is the next difficult step, and diverse parental values and beliefs are among the most important factors that have an impact on these decisions (Birch et al., 2016; Rice, 2001). Parents who are making these kinds of multiple eventful decisions require accurate information and support (Williams, Alderson, & Farsides, 2002; Ross, 2015).

Medical and mental health providers also encounter many ethical and professional challenges. Determining what conditions to screen for, and when and how to screen for them, are among the immediate decisions to be made (Ross, 2015; Williams et al., 2002). Among the most demanding challenges for medical and mental health professionals are the following: obtaining informed consent, dealing with uncertainty, providing upsetting feedback, respecting value conflicts, and maintaining professional identity and expertise. The extent to which a genetic counselor is directive or nondirective may require special ethical judgment (Bower et al., 2002; Ross, 2015; Weil, 2003).

From a societal standpoint, there is much to be addressed. First, we need to recognize that there are many viewpoints in this multidisciplinary field (Pelletier & Dorval, 2004). There are parents, physicians, psychologists, bioethicists, advocates for disabled children and adults, and others who have reasoned and passionate beliefs that are at odds with one another. Keeping all these people and the many social consequences of genetic counseling in mind, we need to be able to anticipate the various ethical issues that confront diverse populations (Parker & Gettig, 1997). We need to discuss the personal, community, and economic costs and benefits of genetic counseling. In addition, we need to develop practice recommendations for counselors (Bennett, Pettersen, Niendorf, & Anderson, 2003; Minear et al., 2015). For all these tasks, ethically informed decision making depends on our commitment to engage in respectful dialogue, as individuals and as a society.

connections and achievements that all children deserve. To include as many children as possible, we need to pay attention to cultural attitudes, national guidelines and practices, and stigma that may negatively affect support and inclusion (McConkey, Dowling, Hassan, & Menke, 2013; Rotholz, Moseley, & Carlson, 2013; Scior, Addai-Davis, Kenyon, & Sheridan, 2012). The identification of special services and support for families with children with intellectual developmental disorder as a result of particular genetic etiologies (e.g., Down syndrome or Williams syndrome) is also important.

The second point to emphasize is that mental health is an important issue for everyone, regardless of level of intellectual functioning. We must be careful not to define a person by a single, if salient, attribute like intellectual developmental disorder (or, for that matter, being intellectually gifted or a star athlete). Psychological variables such as emotional experiences and social relationships are every bit as relevant for individuals diagnosed with intellectual developmental disorder as for those who are not. Intervention strategies, then, must be designed to address all relevant problem areas. Finally, although exceptional progress in the treatment of mental illness has been made in recent years, these advances are often delayed in their application to special needs populations such as children and adolescents with intellectual developmental disorder. The mental health field has a clear obligation to improve its efforts to apply effective treatment approaches to all groups, including individuals with intellectual disabilities.

Genetic Screening and Prevention Strategies

Genetic screening of parents, prenatal testing, and genetic counseling afford many specific intervention opportunities. However, with "technology . . . advancing more rapidly than the ethical and practical guidelines for its use" (Simonoff, Bolton, & Rutter, 1996, p. 273), we must be careful to respect many different viewpoints (see Box 6:3). Broad-based prevention approaches, such as public information campaigns discouraging drinking while pregnant, are critical (Cannon et al., 2015). Prevention that is focused on minimizing or eliminating a variety of poverty experiences may provide meaningful returns on investment (Nisbett et al., 2012). Providing parents with resources that enhance their efforts to support their children's intellectual development is another basic prevention strategy (Leffel & Suskind, 2013).

Pharmacological Treatment

Once intellectual developmental disorder has been diagnosed, there are a variety of treatment options that share similar goals: to develop and maintain skills, increase positive attributes, and decrease negative characteristics of intellectual developmental disorder. Pharmacological treatments of associated maladaptive behaviors and comorbid disorders are common, with the majority of individuals with intellectual developmental disorder who reside in institutions on some sort of psychotropic medication, with multiple medications prescribed. Accepted practice parameters, however, suggest that individuals with intellectual developmental disorder be prescribed psychotropic medications cautiously, given difficulties related to informed consent, enhanced sensitivity to drugs and their side effects, and poor monitoring of outcomes (Tylenda et al., 2014).

Psychological Treatment

Psychological treatments are complex and comprehensive, and there is research and clinical consensus that children and adolescents with intellectual developmental disorder benefit from individual, family, and group therapies. Better outcomes are associated with therapeutic practices that take into account multiple domains and contexts of development (Shogren et al., 2014). Therapies include behavioral treatments, cognitive treatments, and socioemotional programs, as well as family, educational, and vocational planning (Tylenda et al., 2014). Educational interventions often have dramatic impact, depending on the factors underlying impaired intellectual functioning (Rutter et al., 2004). As with many other treatment strategies, early intensive efforts are associated with better outcomes. Including the individual with intellectual disabilities in treatment-planning decisions is important, as is supporting self-advocacy skills (Simplican et al., 2015). Following educational interventions, behavior modification therapies are among the most frequently used. The goals of behavioral strategies include enhancing adaptive skills and teaching appropriate behaviors. Given that maladaptive behaviors are a major source of difficulty at home and at school, these strategies are essential.

Family Education and Support

Given the lifelong nature of intellectual developmental disorder, the family's role in treatment is a prime concern. Parents often serve as co-clinicians and educational advocates (Carroll, 2013b; Glidden, 2012; Hewitt et al., 2013), and both direction and support are necessary. For instance, some parents are reluctant to set strict behavioral limits for their children with intellectual developmental disorder. Although based on empathy or sympathy, this reluctance also may reflect a lack of understanding about the need for structure and clear expectations (Hodapp, 2004). For children and adolescents with intellectual developmental disorder, positive adjustments and outcomes depend on integrated, collaborative efforts that provide as much information, support, and optimism as possible.

Learning Disorders

The Case of Ethan

Ethan is 10 years old and in fifth grade. He was referred for neuropsychological assessment at the request of his parents, who are concerned about his difficulty completing tasks and academic underachievement. Language processing difficulties were identified early in Ethan's development, and he received speech and language therapy before entering elementary school.

Ethan's parents note that although they have no current concerns about his language skills, Ethan is reluctant to initiate writing tasks, often getting upset and claiming, "It's impossible!" This is true even when the writing is not related to his schoolwork (for example, making cards or writing notes to family members). He loves to have books read to him but argues when his parents try to encourage him to read on his own. His parents are concerned that an underlying learning disorder might be contributing to his increasing resistance to school. Although respectful of their concerns, Ethan's teacher feels that his issues are more likely related to anxiety and his tendency to procrastinate.

The neuropsychologist assessing Ethan noted that he struggled with writing tasks. He had difficulty forming letters, which were printed awkwardly. In addition, his spelling and written output appeared slow and labored. Ethan made frequent erasures as he worked and, on an untimed test involving math problems, he appeared reluctant to use a paper and pencil to work on the problems, preferring to do them in his head. Test results showed Ethan's general cognitive abilities to be in the high average range, with processing speed (measured by timed tests with pencil and paper) to be the one area of relative weakness.

Ethan's executive functioning skills are generally typical for his age, although his parents state that he has difficulty controlling his emotions at home, especially in regard to completing his homework, when he can quickly become frustrated and angry. Achievement testing showed that Ethan has strong math reasoning ability and good reading comprehension scores. However, his writing skills are more problematic and discrepant from most of his other abilities. Ethan needs considerably more time than average on writing tasks. He appears to struggle as he thinks about how to form each letter as he writes it. He shows poor visual–motor control, but his fine motor speed and coordination are not delayed.

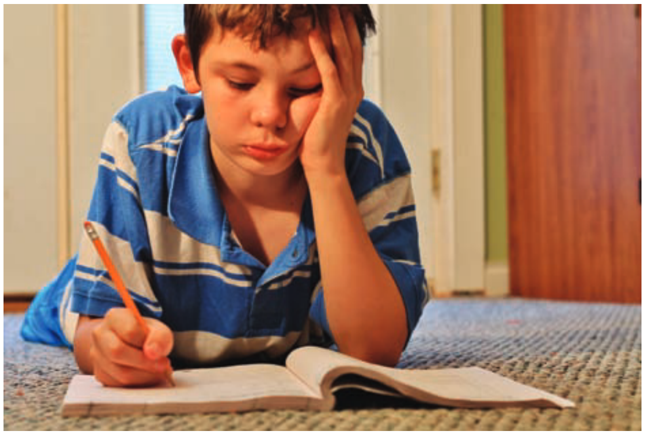
On standardized tests, Ethan scored below age expectations in terms of his ability to write conventionally (e.g., use of paragraphs and punctuation) and had even more difficulty with his contextual language skills (e.g., with fragmentary sentences, run-on sentences, absence of compound sentences). However, with a topic of his choosing, Ethan was able to show good story construction, with sequence and plot, and scored in the average range. The neuropsychologist concluded that Ethan meets the criteria for Learning Disorder of Written Expression, as evidenced by his differentiated difficulties with handwriting, conventional writing skills, and clarity of written expression.

With this understanding, Ethan's teachers worked with his parents to develop a plan that included decreasing the amount of written work required of Ethan, while at the same time providing him with greater support in an effort to improve his writing skills, increase his confidence in his writing, and decrease his feelings of frustration and inadequacy. Additional strategies, such as reducing unnecessary copying, providing additional time for tasks requiring written work, and increasing the use of keyboarding and dictating for longer written assignments, were also recommended. ■

Children, adolescents, and adults with learning disorders display persistent difficulties in the acquisition and application of academic skills. These difficulties are associated with significant impairment in school, work, and/or everyday living. Given the dimensionality of learning (i.e., the continuity between typical and atypical performance) and the inferences involved in making a diagnosis of learning disorder (e.g., how to make a decision related to lack of skills), it is not surprising that definitions of learning disorders change over time. The most common approach to conceptualizing learning disorders, over the past several decades, emphasized the discrepancy between an individual's aptitude (usually measured with an intelligence test) and achievement.

According to Fletcher, Lyon, Fuchs, and Barnes (2007), this approach lacks external validity because it does not specify what exactly is disordered in learning disorders. Alternative models that focus solely on low achievement or intraindividual patterns (e.g., unevenness in academic skills, with particular patterns of cognitive strengths and weaknesses) are also problematic. Response to intervention (RTI) models focus on students who do not respond to appropriate instruction and high-quality interventions. Fletcher, Lyon, Fuchs, and Barnes (2007) suggest that an integrated model of learning disorders is more useful. In their model, students' responses to appropriate instruction, low achievement, and intraindividual differences in academic skills all contribute to the construct of learning disorders.

DSM-5 describes three domains of **specific learning disorder**: reading, written expression, and mathematics. Disorders are associated with "unexpected underachievement" (Fletcher et al., 2007). Exclusionary factors that might compromise learning include problems involving sensory or perceptual skills, low intelligence, emotional and behavioral difficulties, economic disadvantage, and inadequate instruction. Children may display one or more specific learning disorders. Descriptions of specific learning disorders overlap somewhat with the related constructs of verbal learning disabilities and nonverbal learning disabilities. Verbal learning disabilities are similar to language-based reading and writing learning disorders. Nonverbal learning disabilities include atypical difficulties involving motor skills, visual–spatial skills,



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Specific learning disorders in areas such as written expression may contribute to academic underachievement.

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and social skills. These specific descriptions are not included in DSM-5, although categories for social communication disorder and motor disorders are included.

Specific learning disorders involving reading include difficulties related to *word recognition*, *reading fluency*, and *reading comprehension*. Each of these difficulties is associated with an academic skill deficit and a core cognitive process (Fletcher et al., 2007). The academic skill deficit in word recognition (i.e., dyslexia) involves single-word decoding (Peterson & Pennington, 2012). The core cognitive process is phonological awareness (i.e., the metacognitive understanding that the words that we hear and read have internal structures based on sound).

Other processes related to word recognition are the rapid naming of letters and digits, and working memory for verbal and/or acoustic information. The academic skill deficit in reading fluency is reading speed (i.e., accuracy and automaticity). The core cognitive deficit is rapid automatized naming. Compared to other languages (e.g., German, Dutch, Swedish, French, Spanish, and Finnish), the English language is especially difficult to master (Aro & Wimmer, 2003; Peterson & Pennington, 2012). The academic skill deficit in reading comprehension involves extracting meaning from text. The core cognitive deficits (in children who are typical with respect to decoding) include language skills, working memory, and inferencing (making interpretations and/or integrations).

For learning disorders related to mathematics, the academic skill deficits include computation and problem solving. Although there is much less research compared to reading problems, core cognitive deficits are observed in working memory, executive functions, and language (Butterworth, Varma, & Laurillard, 2011; Fletcher et al., 2007). Researchers have described several patterns of math skills, math performance, and math anxiety that are associated with various achievement outcomes (Hart et al., 2015). For disorders related to written expression, academic skill deficits include handwriting, spelling, and composition. The core cognitive processes include fine motor skills, the automaticity of handwriting, and spelling (Fletcher et al., 2007).

Prevalence rates for learning disorders involving reading range from 10% to 15% in school-age populations, and from 80% to 90% of those in special education programs in the United States. Boys are somewhat more frequently diagnosed (Fletcher et al., 2007; Peterson & Pennington, 2012). Rates are similar for learning disorders involving mathematics in samples of school-aged children; there do not appear to be gender differences in these rates (Fletcher et al., 2007). There is not much data on rates of learning disorders involving written expression. Learning disorders are frequently diagnosed with other disorders, including ADHD, autism, and mood disorders (Mayes & Calhoun, 2006; Peterson & Pennington, 2012).

Because languages and writing systems differ (often in significant ways), and various countries and societies have particular ways of understanding learning, education, and individual differences in children, it is important to examine learning disorders in a sociocultural context. Learning disorders are common in many countries. For example, approximately half of children receiving special education services in Guatemala and Spain are children with learning disorders (Jiménez & de la Cadena, 2007). Rates are much lower in Taiwan and South Korea, which may reflect differences in the writing system, emphasis on education and academic performance, and a reluctance on the part of parents to label their children as disabled (Tzeng, 2007).

Developmental Course

Even when special education efforts are taken into account, learning disorders involve persistent difficulties rather than developmental delays in the acquisition and use of academic skills. With a developmental progression from oral language skills at 3 ½ years, to word literacy skills at 5 ½ years, to reading comprehension at 8 ½ years, the early identification of at-risk children is critical (Hulme, Nash, Gooch, Lervag, & Snowling, 2015). Indeed, the learning and achievement gaps between typically developing children and children with learning disorders often widen over time, although some children with learning disorders do display compensatory cycles of growth (Morgan, Farkas, & Wu, 2011; Peterson & Pennington, 2012).

Problematic learning experiences have many outcomes, including poor achievement and poor personal and social adjustment (Blair & Dennis, 2010). Learning disorders are also associated with the development of both internalizing and externalizing disorders in the elementary school years (Halonen, Aunola, Ahonen, & Nurmi, 2006). The role of parents in influencing children's developmental pathways of achievement and adjustment is noteworthy. Related to special education efforts, parents are involved in the identification of learning problems, collaborations with school professionals (e.g., homeroom teachers, special education teachers, and aides), and issues related to equity and advocacy (Valle, 2011).

With respect to motivation, it is critical to address intelligence mindsets and the beliefs of both child and parent about intelligence (i.e., whether intelligence is

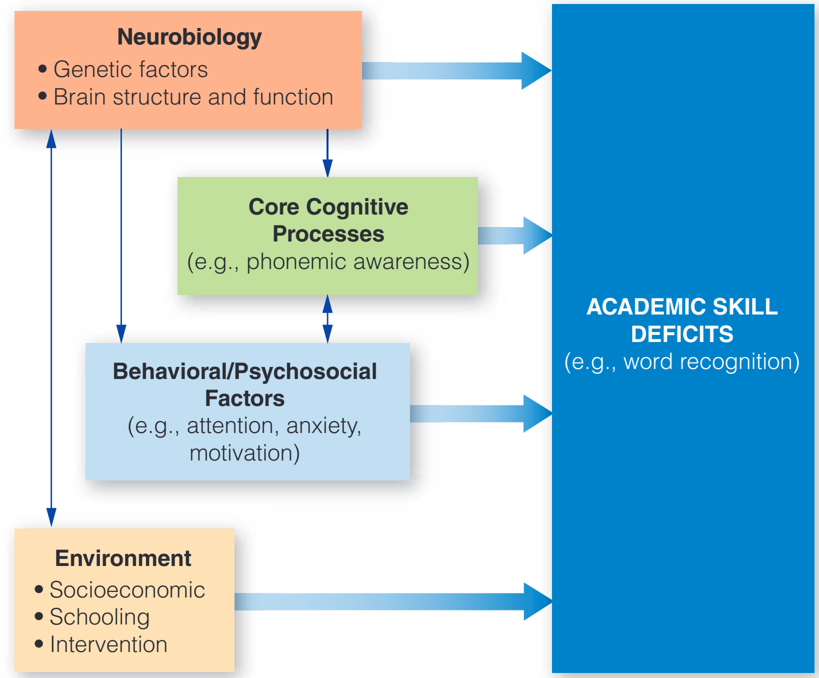


FIGURE 6:3 Framework representing different sources of variability that influence academic outcomes in children with learning disorders.

Source: From Fletcher et al. (2007).

fixed or malleable), success, and failure (Haimovitz & Dweck, 2016). Understanding the motivation to learn also requires an appreciation of the impact of genetics, environments, and culture (Kovas et al., 2015). Keep in mind, of course, that many, many children and adolescents diagnosed with learning disorders are successful in both school and life.

Etiology

Fletcher et al. (2007) provide a model of multiple influences on the development of learning disorders (see Figure 6:3). These influences include genetic factors, neurobiological factors, child factors, and environmental factors. With respect to genetic factors, there is evidence for a strong heritable component. Children whose parents have dyslexia are at much higher risk for the development of a learning disorder (i.e., rates of 30% to 60%); rates of disorders are higher in fathers, compared to mothers, of children with learning disorders (Fletcher et al., 2007; Peterson & Pennington, 2012; Thompson et al., 2015). Genetic influences are also documented for mathematics ability and disability (Docherty et al., 2010). In fact, recent analyses suggest that the genes that influence the development of learning disorders are "generalists"; that is, the same genes influence individual differences in multiple cognitive domains (Kovas et al., 2007; Pennington, 2015). The continuity over time in the display of learning disorders is also genetically mediated (Logan et al., 2013; Soden et al., 2015). Gene-by-environment interactions are also evident, with poor outcomes for children with genetic and environmental risks (Docherty, Kovas, & Plomin, 2011). There are also data suggesting that there is overlap in the genetic influences on learning disorders and ADHD (Pennington, 2006).

Differences in brain structure and function have been described, with involvement of larger neural networks (i.e., the left hemisphere regions) associated with the language system (Fletcher et al., 2007; Pennington, 2015). The parietal lobes are the focus of research on mathematics-related learning disorders (Butterworth et al., 2011). A review of the cross-cultural research in this area emphasizes the universality of genetic and physiological processes (Peterson & Pennington, 2012).

Child factors are also important to consider. As noted earlier in this chapter, individual approaches to learning and school readiness likely influence early academic success (Li-Grining et al., 2010). Other cognitive factors that have an impact on the emergence of learning disorders include executive functions (Best, Miller, & Jones, 2009; Blair & Dennis, 2010). Multiple cognitive deficits, as well as specific deficits that have cascading effects, have also been described (Anderson, 2008; Pennington, 2006).

Environmental factors, usually discussed in combination with genetic risk, also influence the development of learning disorders. As already noted earlier, children with learning disorders often have parents with learning disorders. Parents who are poor readers are less likely to read to their children, so they provide less-frequent and lower-quality reading experiences (Fletcher et al., 2007). Economically disadvantaged families and families experiencing significant stressors are also less likely to provide and support learning-related activities (Docherty et al., 2011; Morgan et al., 2011). Combinations of family factors and cultural factors also affect school readiness (Iruka, LaForett, & Odom, 2012). School factors such as teacher expectations, teaching practices, and class size are also important. With respect to the course of learning disorders, environments appear to contribute to change over time, in contrast to the continuity effect of genes (Kovas et al., 2007).

Assessment, Diagnosis, and Intervention

Early models of learning disorder assessment began with diagnosis and testing of struggling children and then progressed to treatment. Recent models of assessment emphasize that large-scale screenings and instruction implementation should be provided to all students. Those who do not learn on typical timetables can then be provided with increasingly intensive interventions (Fletcher & Vaughn, 2009). The goals of this type of assessment and intervention plan include preventing disabilities and enhancing educational opportunities for all children (Fletcher & Vaughn, 2009).

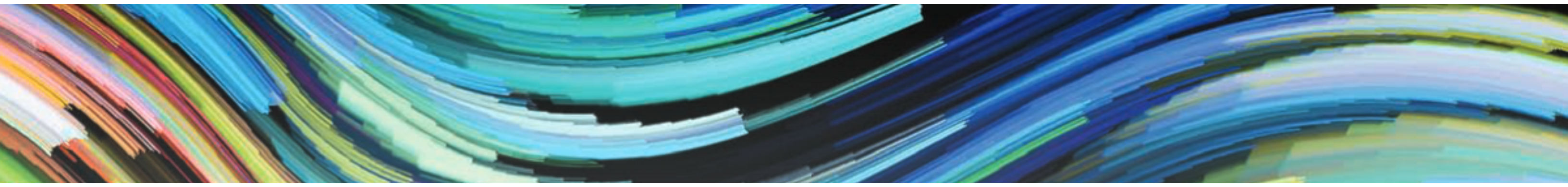
Advances in intervention research and practice are taking place around the world (for instance, in Africa, in Israel, and in Europe) and take into account educational systems, differences in ethnicity and socioeconomic backgrounds, and access to effective services (Abosi, 2007; Correia & Martins, 2007; Gumpel & Sharoni, 2007; Thygesen, 2007). In the United States, special education and remediation efforts are often based on **individualized education plans** (IEPs) designed for students with learning disorders. Individual and small-group lessons are often components of an IEP and are focused on specific academic skills and cognitive deficits (Wills, 2007). Empirically informed adaptive software is a relatively recent innovation (Butterworth et al., 2011). Related characteristics, such as self-regulation abilities, are also targets of change (Blair, 2002; Raver et al., 2011). The earlier the intervention, the better the outcome (Wills, 2007).

Key Terms

Cognitive development (p. 88)
Intellectual development (p. 88)
Intellectual developmental disorder (p. 90)
Intellectual functioning (p. 90)
Adaptive behavior (p. 90)
Genotypes (p. 93)
Behavioral phenotypes (p. 93)
Down syndrome (p. 93)
Williams syndrome (p. 94)
Fragile X syndrome (p. 94)
Specific learning disorder (p. 103)
Individualized education plan (IEP) (p. 106)

Chapter Summary

- Individual patterns of intellectual development are relatively stable by 4 or 5 years old.
- Intellectual developmental disorders involve significant deficits in intellectual functioning and adaptive functioning.
- The classification levels of mild, moderate, severe, and profound intellectual developmental disorder describe the degree of compromise in intellectual and adaptive functioning present in an individual diagnosed with intellectual developmental disorder.
- Adaptive behavior refers to the ability to master age-appropriate tasks of daily living.
- An alternative classification approach focuses on the relation between genetic causes (genotype) and specific behaviors and symptoms (phenotype). Examples of this approach include Down syndrome, Williams syndrome, and fragile X syndrome.
- In addition to careful consideration of all relevant medical and developmental background information, standardized assessment of both intellectual and adaptive functioning is critical to the valid and reliable diagnosis of intellectual developmental disorder.
- In contrast to most forms of psychopathology, the focus of treatment for intellectual developmental disorder is not the condition itself. Rather, the focus of intervention is the maximization of the individual's potential functioning.



7 Autism Spectrum Disorder

CHAPTER OUTLINE

The Case of Noah
The Case of Matthew
Historical and Current Conceptualizations of Autism Spectrum Disorder
Developmental Tasks and Challenges Related to the Coordination of Social, Emotional, and Cognitive Domains
Social Cognition
Theory of Mind
Affective Social Competence
Autism Spectrum Disorder
Social and Communication Deficits
BOX 7:1 EMERGING SCIENCE: Eyes, Faces, and Social Engagement Processes
Repetitive Behaviors and Fixated Interests
BOX 7:2 CLINICAL PERSPECTIVES: Splinter Skills and Savant Talents
Prevalence and Related Information
Developmental Course
Infancy and Childhood
Adolescent and Adult Outcomes
The Role of the Family
Etiology
Early Hypotheses
Genes and Heredity
Physiological Factors
Child and Environmental Factors
Assessment and Diagnosis
Parent Interviews
Checklists, Rating Scales, and Observations
Differential Diagnosis and Comorbid Disorders
Intervention
Prevention Efforts
Pharmacological Treatment
Psychological Treatment
School-Based Programs
BOX 7:3 CLINICAL PERSPECTIVES: The TEACCH Model of Intervention
Long-Term Treatment

The Case of Noah

Four-year-old Noah was referred for a psychological evaluation two years ago after his parents and pediatrician became concerned about his significantly delayed language development. Noah's parents described him as an extremely fussy baby who was hard to settle. Unlike his older sister, he was not very cuddly and, much to his parents' dismay, actually seemed to become more distressed when he was held. Although Noah's motor milestones were all achieved at the expected times, his language and communications skills lagged far behind. Not only did he speak much later than expected, he seemed to show little interest in any kind of communication. For example, he did not respond to his name and did not seek his parents' attention.

Noah is very dependent on fixed and predictable routines. He plays with only a few toys, and always in the same order. When playing, he often uses toys in unusual ways that do not fit their intended purpose, such as using a doll to hammer in a peg or repeatedly spinning a horse on its side. He becomes extremely upset if these favorite toys are moved or rearranged on the shelf in his room where he keeps them. Noah also has difficulty engaging in imaginative or pretend play. Even on Halloween, he had difficulty with the idea of pretending to be a character, finding the idea confusing and upsetting.

When Noah speaks, which isn't often, his speech is atypical in rhythm and volume, and he frequently reverses his pronouns (saying, for example, "Would you like the ball?" when he wants someone to give him a ball). When his parents or the evaluators attempt to speak directly to Noah, he quickly looks away and sometimes even turns his back on them. Noah has always been extremely active and easily frustrated; at times when he is upset, he bangs his head against the wall. He is described as being generally fearful and anxious in new situations and settings, and has been observed engaging in lots of hand-flapping and other self-stimulating behaviors. Noah's parents are quite worried about his starting kindergarten in a few months, knowing that he will be reluctant to be away from home and does not seem at all interested in the school setting or in meeting or playing with other children. ■

The Case of Matthew

Matthew is nine years old and having considerable difficulty at school. Although Matthew's early motor and cognitive development were typical, he began to show both communication and social disturbances as a preschooler. For instance, Matthew can be very affectionate and engaging, but he can also be intrusive and overwhelming when interacting with other children. Although quite talkative from an early age, Matthew often talks at length about his own interests and is quite resistant to sharing in the interests or responding to the questions of others. By the time he entered elementary school, Matthew had developed clear, specific, and obsessive interests. This characteristic first manifested itself in his keen interest in weather and meteorology, which now includes weather radar equipment. All his reading and nearly all conversations that he initiates with others are on these topics. Although his parents, teachers, and older siblings have all explained to him that his intensity and relentless focus make others uncomfortable, he has not modified this behavior at all.

In the primary grades, the major concerns expressed by his teachers were his poor attention, impulsivity, and poor work completion. Although these problems have continued, his poor social skills are currently causing the most difficulty. Matthew was mostly ignored and somewhat isolated in his early school years, but now he has become the target of teasing and rejection. Recently, his classmates have goaded him into doing things that have gotten him into trouble and resulted in his being ridiculed by classmates. Matthew is quite sensitive to the trouble that he is having in regard to schoolwork and friendships, but he shows little insight into either the causes or the solutions to these problems. ■

Historical and Current Conceptualizations of Autism Spectrum Disorder

Both Noah and Matthew exhibit a pattern of emotional, cognitive, and behavioral characteristics that reflect atypical development associated with clinically significant impairment. What we call these patterns is important because the names of disorders facilitate research on causes and treatments, allow mental health professionals to communicate with parents and teachers, and help children and adolescents make sense of their challenges and strengths. The disorders displayed by Noah and Matthew have, at various times, been called *autistic disorder*, *Asperger syndrome*, *high-functioning autism*, *atypical autism*, and *pervasive developmental disorder*; they are now called **autism spectrum disorder (ASD)**. The change in nomenclature in DSM-5 must be understood in the context of continuing work focused on the complex etiology of autism, the varied developmental pathways, and the best interventions for Noah and Matthew and children like them.

Current conceptualizations of autism spectrum disorder are based on decades of work following clinical summaries provided by Leo Kanner (1943) and Hans Asperger (1944/1991) (Tager-Flusberg, 2014; Volkmar & McPartland, 2014). Both Kanner, in his descriptions of children with "early infantile autism," and Asperger, in his portrayals of boys with "autistic psychopathy," emphasized the children's profound lack of social awareness. Asperger, however, described better language skills and more social interest in his small sample (Asperger, 1944/1991). Much of the theory and research on autism in the United States, at least up until the 1990s, was based on Kanner's work. A picture of autism emerged that highlighted three areas of deviance: social isolation, impaired language and communication, and stereotypical behaviors. Some children, of course, did not fit the classic presentation. These children usually had better cognitive and language skills and were thought to have "high-functioning autism." More recently, clinicians and researchers hypothesized that some of the children diagnosed with high-functioning autism might be better understood (and better treated) if their symptoms and struggles were conceptualized as a related, but distinct, disorder: Asperger syndrome. Asperger syndrome was included as a separate diagnosis in DSM-IV.

Over 15 years of research, clinical work, and discussion and debate later, the overwhelming evidence is that autism and Asperger syndrome are best understood as part of a continuum (i.e., a spectrum) of disorder, and that is how these disorders are presented in DSM-5. One last point: Neither Noah nor Matthew, in the cases presented at the beginning of this section, display intellectual disabilities. The high rate of comorbidity between autism and intellectual disability is the focus of ongoing research (Lecavalier, Snow, & Norris, 2011; Schieve, Clayton, Durkin, Wingate, & Drews-Botsch, 2015).

Developmental Tasks and Challenges Related to the Coordination of Social, Emotional, and Cognitive Domains

The sections on typical development in the previous chapters have summarized physiological functioning, temperament, attachment, and intellectual functioning, in order to provide useful comparisons and contrasts for specific disorders. In this chapter, rather than focusing on a single domain of functioning, we emphasize the interdependent, coordinated nature of early development.

Social Cognition

This more integrative overview begins with a focus on **social cognition**, a construct at the intersections of self and other, emotion and cognition, and language and meaning. Social cognition refers to the many ways that people think about themselves and their social worlds. We are especially concerned with the ways in which young children take in and meaningfully process socially relevant information from the vast amounts of information available to them. An appreciation of social cognition in the typically developing child is essential in order to understand what goes wrong for children with autism spectrum disorder.

Two of the most important features of social cognition are the distinctions between what is more and less important, and what is social and nonsocial. According to Landa (2000, p. 133), almost all children "pay attention to what is important. This awareness of salience is reflected in children's first words, which typically represent a salient person, place, thing, or action such as 'ball, kitty, cookie' rather than inanimate objects having little relevance in their lives such as 'wall.'" Among salient people, places, and things, people receive the most attention. Almost all children recognize that the caregiver is worthy of notice and behave as if emotional and social engagement with the caregiver is special, pleasant, and informative. Indeed, "infants have many opportunities to observe people acting on objects, interacting with other people, and emotionally responding to these events. Thus, there is the potential for infants to acquire a rich set of social knowledge from observation alone." And, typically developing children are "well-equipped to engage in 'socially guided' learning" (Repacholi & Meltzoff, 2007, p. 503).

Social learning tasks include both learning *from* others (e.g., imitation of action, mirroring of emotion) and learning *about* others (e.g., others' desires, beliefs, intentions); learning begins early in development and extends throughout childhood and adulthood (Frith & Frith, 2012). According to Meltzoff (2007, p. 126), the "*like me* nature of others is the starting point for social cognition." In order to acquire important social information while interacting with others and while observing others, infants must appreciate (at some basic level) that others are like themselves. This "salient recognition experience" provides the basis for the first of many interpretations of the social world and allows children "to imbue the behavior of others with felt meaning" (Meltzoff, 2007, p. 132).

There are numerous investigations of the role of brain structure and function related to social cognition. The research on "building a social brain" is focused on identifying various brain regions implicated in the processing of important social stimuli (e.g., faces, human movement) and describing the development of increasingly organized networks of activity (Johnson, Grossman, & Kadosh, 2009; Perlman, Vander Wyk, & Pelphrey, 2010). This development is the result of ongoing "interactions between different brain regions and between the whole brain and its external environment" (Johnson et al., 2009, p. 151).

Theory of Mind

In addition to recognizing the salient and social aspects of one's surroundings, Landa (2000) discusses how simple but essential behaviors also contribute to interdependent, coordinated development. In Landa's view, "communicative intentions," such as eye contact, pointing, and shared attention, smooth the processes of social interaction and facilitate and reward participation in the social world. Investigations of these kinds of communicative intentions, or **joint attention**, provide strong evidence for its role in fostering development across domains. Joint attention is the capacity to coordinate one's visual attention with the attention of another person (Mundy & Jarrold, 2010). It is both "a consequence and an organizer" of brain development that serves to "respond to and direct the behavior of other people in order to share experience" (p. 985). Joint attention is also an example of social perception that precedes social cognition (Perlman et al., 2010).

One important developmental achievement dependent on joint attention involves the child's theory of mind. **Theory of mind (ToM)** refers to an ability to attribute mental states to others (Baron-Cohen, 1989, 1995, 2001), and to see others as "bodies animated by minds" (Griffin & Baron-Cohen, 2002). Theory of mind develops from infancy through late childhood and beyond (Hughes & Devine, 2015; Peterson, Wellman, & Slaughter, 2012). With ToM, children "learn to follow another's gaze, engage in pretend play, understand that another person can hold a different belief than oneself, [and] comprehend jokes and irony" (Ahmed & Miller, 2011, p. 668). The perspective taking that underlies ToM is essential for "successful social interactions in everyday functioning" (p. 668). We see evidence of ToM in all sorts of social exchanges, such as when babies look first to parents for information before approaching a large puppy, and then again when they share their delight in puppy licks and kisses.

Affective Social Competence

The development of social cognition over the early years also depends on increasingly complex emotion skills. **Affective social competence** involves the coordination of the capacities to experience emotion, send emotional messages to others, and read others' emotional signals (Halberstadt, Denham, & Dunsmore, 2001; Halberstadt, Parker, & Castro, 2013). The dynamic interaction of these types of emotion abilities with emerging cognitive abilities provides yet another way that children are able to glean salient information from their social partners. Overall, then, the developmental transition from the sensorimotor experiences of infancy to the symbolic experiences of toddlerhood and later years is marked by ever-increasing coordination among various developmental domains and processes. This in turn leads to an emphasis on the idea of the child as a social being in a social world and the recognition that this is of central importance throughout development.

Autism Spectrum Disorder

Autism spectrum disorder (ASD) is characterized by deficits and significant impairment in two domains: (1) social and communication deficits and (2) repetitive behaviors and fixated interests. For a diagnosis of autism spectrum disorder, children, adolescents, or adults must display three kinds of social and communication deficits: deficits in social–emotional reciprocity; deficits in nonverbal communication during social interactions; and deficits in developing and maintaining relationships. Each of these deficits is evaluated against developmental norms. In addition to these social and communication deficits, children must display at least two types of repetitive behaviors and fixated interests. These might include stereotyped or repetitive speech, motor movements, or use of objects; excessive adherence to routines or ritualized patterns or resistance to change; highly restricted interests that are atypical with respect to intensity or focus; or atypical sensitivity to sensory stimulation or atypical interest in aspects of the sensory environment. In addition to the core symptoms described in DSM-5, the level of severity of the symptom picture is noted, ranging from *requiring support*, to *requiring substantial support*, to *requiring very substantial support*. This severity index reflects the newly emphasized dimensional conceptualization of autism spectrum disorder (see Table 7:1). The diagnostic criteria in DSM-5 are intended to capture "the similarities that do exist within the syndrome while recognizing the diverse ways that these core deficits can be manifested" (Lord & Bishop, 2015, p, 57). These broader domains also help clinicians and researchers track continuity or change across development. For example, "not responding to one's name and not following another person's pointing gesture are strong predictors of autism in toddlers and younger preschool children but not in older children or adults" (Lord & Bishop, 2015, p. 57).

The validity of the revised DSM-5 criteria has been the subject of much research and debate. The key issues include sensitivity (i.e., do the revised criteria capture all children who struggle with ASD?), specificity (i.e., do the revised criteria differentiate children with ASD from children with other disorders and from typically developing children?), and service eligibility (i.e., do the revised criteria make it more difficult for children

TABLE 7:1 Autism Spectrum Disorder: Summary of DSM-5 Diagnostic Criteria

A. Deficits in social communication and social interaction across multiple contexts
  1. Deficits in social–emotional reciprocity
  2. Deficits in nonverbal communicative behaviors used for social interaction
  3. Deficits in developing and maintaining relationships, appropriate to developmental level

B. Restricted, repetitive patterns of behavior, interests, or activities
  1. Stereotyped or repetitive speech, motor movements, or use of objects
  2. Excessive adherence to routines, ritualized patterns of verbal or nonverbal behavior, or excessive resistance to change
  3. Highly restricted, fixated interests that are abnormal in intensity or focus
  4. Hyper- or hypo-reactivity to sensory input or unusual interest in sensory aspects of environment

C. Symptoms must be present in early childhood (but may not become fully manifest until social demands exceed limited capacities)

D. Symptoms cause clinically significant impairment in current functioning

who struggle with significant impairment to continue to receive mental health and education services?). A number of large-scale studies of the new criteria suggest that the two-factor model (social and communication deficits + repetitive behaviors and fixated interests) exhibits superior specificity (compared to DSM-IV) in distinguishing children with ASD from other groups of children (Frazier et al., 2012; Mandy, Charman, & Skuse, 2012; Volkmar & McPartland, 2014). The criteria also better reflect the ways in which ASD is observed in individuals across age, intellectual functioning, and language ability (Lord & Bishop, 2015). The new criteria do not appear to have led to a significant reduction in the number of children diagnosed with ASD (Lord & Bishop, 2015; Tager-Flusberg, 2014).

Social and Communication Deficits

Children with autism spectrum disorder display a heterogeneous set of **social and communication deficits**. Their socioemotional development is both quantitatively and qualitatively different from typically developing children and children with other disorders (Carr & Lord, 2009; Klin, Schultz, & Jones, 2015). Atypical behaviors related to social perception, social motivation, and/or social cognition include a lack of social orienting; a failure to respond to social sounds and signals, such as the parent's voice or clapping hands; a lack of social reciprocity, or the turn taking of social interactions; and fewer and more deviant social behaviors (Dawson et al., 2004; Tager-Flusberg, 2014). Each of these atypical behaviors reflects a relative lack of differentiation between social and nonsocial stimuli. Indeed, for children with autism spectrum disorder, "the striking imbalance between their lack of engagement with people and enhanced engagement with things is at the heart of what differentiates toddlers with ASD from both typically developing toddlers and toddlers with other neurodevelopmental disorders" (Tager-Flusberg, 2014, p. 658).

Ongoing research is focused on identifying the specific social mechanisms that underlie complex social behaviors (Klin et al., 2015). Investigations of infants' atypical patterns of social attention and engagement highlight the ways in which multiple behaviors contribute to a "derailment of processes" that underlie typical social and language development (Klin et al., 2015). Children with ASD display basic social-communication impairments (related to, for example, attention to faces and perception of biological motion) as well as impairments in more complex aspects of social interaction (see Box 7:1). A better understanding of children's impairment profiles may provide insights into improvements in the diagnosis and treatment of ASD (Bishop, Havdahl, Huerta, & Lord, 2016).

In addition to atypical social engagement, there are difficulties related to the experience, perception, and processing of emotion (Hobson, 1991, 1993). In contrast to long-held beliefs that children and adolescents with autism spectrum disorder lack emotion or emotion skills, many studies provide compelling evidence of emotional experiences. Children with autism spectrum disorder display more negative emotion and less well regulated emotion (Mazefsky, Pelphrey, & Dahl, 2012), although a wide range of emotions are described by children and adolescents themselves (Losh & Capps, 2006). Individuals with ASD recognize and express basic emotions such as happiness, anger, and sadness, although they have difficulties with more complex emotions such as embarrassment, pride, and guilt (Hobson, Chidambi, Lee, & Meyer, 2006; Jones et al., 2011). Many individuals with ASD use compensatory strategies (e.g., using better developed cognitive resources) in emotionally demanding situations, but

BOX 7:1

EMERGING SCIENCE

Eyes, Faces, and Social Engagement Processes

Researchers are using a variety of functional magnetic resonance imaging (fMRI), EEG, and behavioral methodologies to gain new insights into how individuals with autism view and interact with their socioemotional and interpersonal worlds. “Understanding how infants, children and adults capture details from their environment is important in trying to unravel how learning and developmental processes take place” (Amestoy et al., 2015, p. 2). Data from multiple studies document various atypical patterns of visual scanning and attentional processing displayed by individuals with autism. Compared to individuals without autism, who look frequently and for relatively longer periods of time at core facial features (eyes and mouth), individuals with autism are less likely to direct visual searching at the eyes (see the accompanying photo, Figure 7:1). Not only is this pattern of face scanning unusual, it is also likely to be incomplete and less meaningful. Given that the perception of faces is a highly developed visual skill with abundant social significance, early deficits are likely to have far-reaching implications (Behrmann, Scherf, & Avidan, 2016). In addition, individuals with autism display atypical processing of biological movement and actions (i.e., looking at what is most informative in the environment). Examples of biological movements include shifts in gaze directions by other persons. Lack of preferential attention to these kinds of biological movements likely underlies deficits in social interaction skills such as joint attention (Gliga et al., 2014; Kaiser & Pelphrey, 2012; Klin et al., 2015).

Infants who are later diagnosed with autism spectrum disorder display distinctive developmental trajectories related to eye gaze in the first year of life (Gliga et al., 2014; Klin et al., 2015). Eye movements and orientation to others’ faces appear typical in the first two months, and this is assumed to reflect a reflexive response. By two months of age, when typically developing infants display eye gaze and orientation that is active and socially meaningful, the infants who are later diagnosed with autism show declines in gaze and orientation. The degree of decline at six months is associated with the severity of ASD at three years. This lack of orientation and motivation leads to “forms of learning that are not grounded in social interaction with a preponderance of learning about the physical (rather than social) environment” (Klin et al. 2015, p. 18). Although atypical eye gaze is not the cause of autism, it appears to be a biomarker of “more generalized failures in social adaptation at the level of brain and epigenesis” (Klin et al., 2015, p. 19).

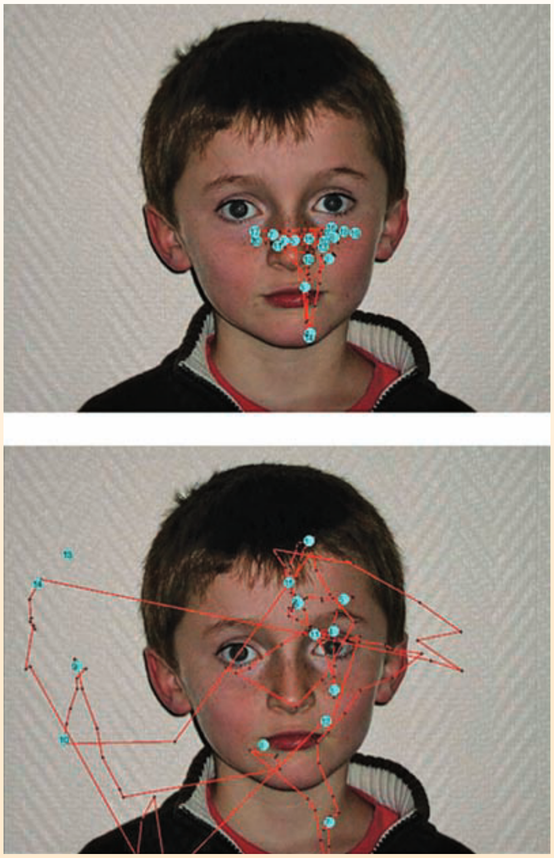


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FIGURE 7:1 Fixations and visual trajectories for a typical individual (top photo) and for a child with autism spectrum disorder (bottom photo).

Both subcortical and cortical brain networks are involved in social attention, social motivation, and social reward processes (Gliga et al., 2014). Also, “social brain” models of autism emphasize the necessary back-and-forth between brain development and organization and early experience (Amestoy et al., 2015). Beyond infancy, across typical development, we see changes in face processing and social engagement. In adolescence, for example, there are new demands and expectations related to peer interactions and new challenges related to accurate face perception (e.g., related to emotion recognition). These challenges also have to be negotiated, of course, by adolescents with ASD (Behrmann et al., 2016), and we need to make sure to capitalize on ongoing brain-behavior research and clinical experience to provide appropriate support for the best possible outcomes.

most individuals clearly struggle. "Even exceedingly intelligent adults with autism seem to lack the necessary tools for successfully traversing the convoluted emotional landscapes that undergird affective interactions and relationships" (Losh & Capps, 2006, p. 810).

Given this emotion-related information, it is important to emphasize that key aspects of important relationships may be intact. Studies of attachment in children with autism spectrum disorder show that many children exhibit secure attachments; that is, "the children's relationships with their caregivers are clearly special, even though their qualities of relatedness are atypical" (Hobson et al., 2006, p. 23). In a study that provides evidence of both typical and atypical emotional development, children with autism spectrum disorder displayed laughter at rates similar to typically developing peers, but their laughs were expressed in response to positive internal states, in contrast to their peers, who laughed in response to positive states and to negotiate social interactions (Hudenko, Stone, & Bachorowski, 2009).

Basic social and emotional impairments influence multiple domains of typical development. Children with autism display deficits in pretend play and imitation (Charman et al., 1997, 2000; Tager-Flusberg, 2014). For instance, "children with autism do not want to use their miniature snow shovel to shovel snow just like daddy or use a screwdriver to repair a toy when mommy is doing the same" (Harris, 1995, p. 306). Other children never deviate from a particular play routine. Filipek et al. (1999, p. 445) provide an example of a "verbal autistic preschooler who 'plays' by repeatedly reciting a soliloquy of the old witch scene verbatim from *Beauty and the Beast* while manipulating dollhouse characters in precise sequence according to the script. When given the same miniature figures and dollhouse, but instructed to play something other than *Beauty and the Beast*, this same child is incapable of creating any other play scenario."

Children with autism also display an overall lack of social "style" (Hobson & Lee, 1998, 1999). The difficulties are perhaps most obvious in reciprocal relationships such as peer friendships, where expectations for social and emotional skills are higher, and are observed even in the highest-functioning groups of children with autism. In some cases, children do better when interacting with much older or younger children, where they can adopt the clearly defined role of follower or leader (Filipek et al., 1999). This is certainly true for Noah, the four-year-old described at the beginning of the chapter, who has the most social difficulties with other children around his age. He is somewhat more comfortable when interacting with his 13-year-old sister or his parents, who understand his routines and rituals and can adjust their behaviors to what he needs most.

With a dimensional perspective, we expect that children with autism spectrum disorder vary in their social and emotional functioning. Some children (e.g., those previously diagnosed with Asperger syndrome and now likely diagnosed with autism spectrum disorder, with fewer supports required) appear to be more aware of others as social beings and more interested in social interactions. However, although the desire and motivation are present, these children are still somewhat stymied by the seemingly intuitive give-and-take of social exchange (Tager-Flusberg, 2014; Volkmar & Klin, 2001). Relying on the formal rules of social behavior, these children make more overtures to other children but often appear awkward, rigid, and insensitive in their interactions. Their general social impairments, as well as the ridicule of their peers, may lead later to the withdrawal and isolation that is more characteristic of children with more severe ASD (Filipek et al., 1999).

With respect to individual differences in emotional development and adaptation, the children previously diagnosed with Asperger syndrome can and do talk about emotions and relationships. But the more time one spends in such conversations with these children, the more it is apparent that the talk is concrete and intellectualized (Klin, Volkmar et al., 2000). One of the authors worked with a young adolescent who was preoccupied with violent "slasher" movies. In therapy, it became clear that he responded to the highly exaggerated (and more easily perceived) emotional states of the characters. Similarly, Matthew, the nine-year-old presented at the beginning of the chapter, is fascinated by comic books. Matthew can talk endlessly about the clearly outlined conflicts, resolutions, and emotional states of the characters, although he never even comes close to expressing these feelings himself.

With respect to communication, children with autism display both delay and deviance. There are impairments in the forms of speech, with slowed babbling and delayed use of words, later onset (or lack of onset) of intentional communication such as pointing, lack of imitation, and atypical nonverbal components of speech such as tone and prosody (Filipek et al., 1999; Tager-Flusberg, 2014). The content of speech is also unusual, with both immediate and delayed echolalia (inappropriate or uncommunicative repetition of words or phrases). For example, in addition to the pronoun reversals of Noah (asking "Would you like the ball?" when he wants a ball), he frequently repeats the last word spoken to him in a conversation. Children who display *only* language delay and disorder (in acquisition and use of verbal language) are not diagnosed with ASD; instead they may meet the criteria for the DSM-5 category of social communication disorder.

There are even more pronounced difficulties with the social use of language, or pragmatics (Filipek et al., 1999; Landa, 2000). Children with autism use language for instrumental reasons, such as getting a dessert, rather than for social purposes, such as sharing one's pleasure in completing a puzzle (Wetherby, 1986). Noah's family, for example, came to realize that he never initiates a conversation unless it is about something he wants or needs. Consequently, they look for these opportunities to engage with him and broaden, by very small increments, the scope of their communication with him.

Some children with autism spectrum disorder (again, mostly those previously diagnosed with Asperger syndrome) engage in pedantic, one-sided conversations. In addition, they do not self-censor their speech. One child in treatment greeted a therapist with "Hi . . . hey did you know your eyes bug out, like you have some medical problem or something?" Klin (2002) provides another example of a college student with Asperger syndrome who asked a student if he would be willing to trade his girlfriend for a watch (note here the very thin line between things and people). Matthew (in the case described earlier), for example, was often preoccupied with issues of fairness at home, where he often complained bitterly about his baby sister getting new clothes when he did not. Although he was able to keep track of her entire wardrobe, he was not comforted by explanations that he was treated similarly as an infant, or by the fact that babies grow more rapidly than nine-year-olds. These descriptions of ASD emphasize "the deeply intertwined connections among social, cognitive, and language development" that are evident across all typically- and atypically developing children (Tager-Flusberg, 2014, p. 658).

An especially compelling perspective on the development and experience of the self in children and adolescents with autism spectrum disorder is provided by Hobson et al. (2006). In their monograph, they describe the emotional, cognitive, and motivational factors that contribute to the development of self-awareness. This emerging awareness takes into account several aspects of self-experience and self-knowledge. First, there is a "relational" or "interpersonal" self, a self embedded in relationships. There is also a "reflective" self, dependent on the ability to understand one's own perspective as person specific and different from others' perspectives. In typical early development, the process of identifying with others supports the trajectory of self awareness. In that process, "there is both connectedness and differentiation" (p. 16). Thinking back to Meltzoff's description of the basis of social cognition as the "like me" phenomenon, it is clear that children with ASD are likely to display an atypical and/or compromised sense of self.

Repetitive Behaviors and Fixated Interests

Most children with autism spectrum disorder exhibit **restricted, repetitive behaviors** and/or stereotyped body movements such as rocking, hand flapping, and twirling (Leekam, Prior, & Uljarevic, 2011). These atypical behaviors are sometimes observed in children with other disorders, but the collective pattern of behaviors is unique for those with ASD. Children with more severe ASD display more restricted and repetitive behaviors (Leekam et al., 2011). Repetitive behaviors in children with ASD appear to be associated with anxiety, both the direct experience of anxiety and attempts to manage or minimize the experience of anxiety (Rodgers, Riby, Janes, Connolly, & McConachie, 2012). Recent research is focused on understanding the ways in which the repetitive behaviors displayed by children with ASD are different from those displayed by typically developing children, as well as identifying emotional and motivational triggers (in addition to anxiety) for repetitive behaviors (Leekam et al., 2011).

Some children with autism spectrum disorder also display **fixated interests** and/or strong attachments to certain objects, but their attachment is often unusual. For instance, a child may be focused only on the wheel mechanisms of toy cars rather than their ability to move across the floor. A different child may be absorbed by the smell of a toy. Many young children with ASD are intrigued by water (Filipek et al., 1999). These obsessions in children are almost always associated with "folk physics" (an interest in how *things* work) rather than in "folk psychology" (how *people* work) (Baron-Cohen & Wheelwright, 1999). In some children with ASD, specialized interests or skills lead to the display of unusual giftedness (see Box 7:2).

Most children with autism spectrum disorder also insist on sameness in their environments and routines, protesting vehemently when this sameness is disturbed. Filipek et al. (1999) describe instances of children needing to have furniture in exact places or clothes in a single color. According to Klin (2002), this insistence on

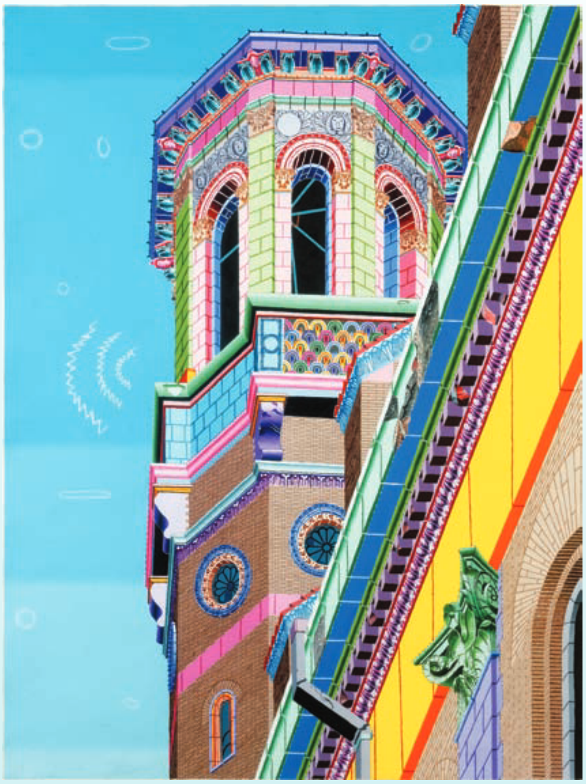
BOX 7:2

Clinical Perspectives

Splinter Skills and Savant Talents

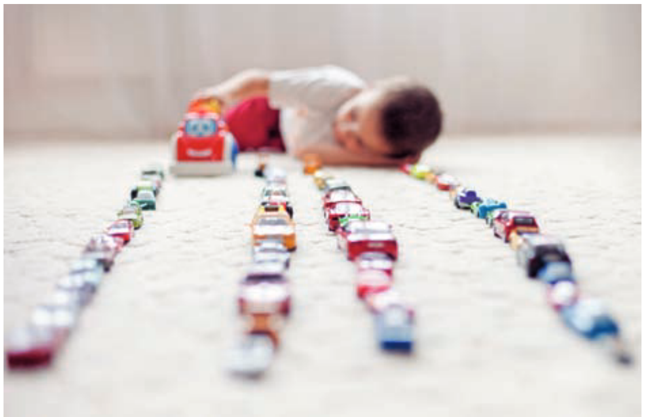
One of the most unusual attributes of certain individuals diagnosed with autism is the extraordinary development of a single skill or talent. Although most children and adolescents with autism struggle with intellectual impairments and display uneven performances in various intellectual domains, there are some individuals who possess relatively preserved sets of skills ("splinter skills"), as well as others whose exceptional abilities in language, drawing, music, or mathematics ("savant talents") capture our attention (Happe & Frith, 2010; Hermelin, 2001). Dustin Hoffman, in the 1988 movie *Rain Man*, portrays an adult with autism who has an amazing facility with numbers. One of Clara Park's books about her daughter Jessy, *Exiting Nirvana*, is illustrated with Jessy's brightly colored, intricately detailed architectural drawings (see Figure 7:2). For the most part, these special skills are not used for practical or constructive ends.

What explains this phenomenon? As we have discussed in this chapter, there is evidence that individuals with autism process information in fragments or segments (with heightened focus on details). Some investigators believe that this tendency is even more developed in those who display special skills, and that there are lesser roles for practice and instruction (Happe & Frith, 2010; Hermelin, 2001; Pring & Hermelin, 2002). The prevalence of talents and strengths in individuals is likely underestimated (Meilleur, Jelenic, & Mottron, 2015). As we try to make sense of observations that reflect multiple connections among intelligence, autism, and giftedness, we need to acknowledge—again—the essential connections between typically developing and atypically developing children.



Jessica Park, St. Paul&apos;s and St. Andrew&apos;s Methodist Church and the Migraine Type Lighting and the Elves, 10/17/98, Courtesy of PureVision Arts.

FIGURE 7:2 *St. Paul's and St. Andrew's Methodist Church and the Migraine Type Lighting and the Elves, 10/17/98*, drawing by Jessy Park. From *Exiting Nirvana: A Daughter's Life with Autism,* by C. Claiborne Park, 2001, New York: Little, Brown.



Tatyana Tomsickova Photography/Getty Images

Children with autism spectrum disorder display fixated interests and/or strong attachments to certain objects.

sameness in the environment is a powerful and meaningful symptom, reflecting the individual's concern and struggle with control of his or her surroundings. Additional investigations have emphasized the role of executive dysfunction (i.e., cognitive rigidity) in children's insistence on sameness (South, Ozonoff, & McMahon, 2007; Szatmari et al., 2006). Some children with less severe ASD may assert control in the verbal and language domain, through dominating conversations and continuing to discuss topics long after conversational partners have wearied.

In addition to repetitive behaviors and fixated interests, many children with autism spectrum disorder display sensory sensitivities, sensory aversions, or unusual curiosity about sensory aspects of the environment.

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Children may exhibit either underreactivity, overreactivity, or odd behaviors and these difficulties are likely to influence the activities in which children participate and the numbers of others with whom they interact (Lord & Bishop, 2015; Pellicano, 2013a). Another category of behavioral difficulties includes externalizing behaviors such as hyperactivity, inattention, disruptive behaviors, and aggression. Children with ASD display these kinds of behaviors at much higher rates than typically developing children (Kanne & Mazurek, 2011; Lord & Bishop, 2015; Mayes et al., 2012). Sleep problems are common and are associated with increased rates of problematic behaviors (Mazurek & Sohl, 2016; Turner & Johnson, 2012). Feeding problems and inadequate nutrient intake are also frequently observed (Sharp et al., 2013).

Prevalence and Related Information

Estimates of the prevalence of autism vary widely. Using data from 14 sites around the United States, the Centers for Disease Control and Prevention of the U.S. Department of Health and Human Services (2012) estimated the current prevalence at 1 in 88, up from 1 in 150 in 2007. Rates vary depending on site and by racial/ethnic group. The lowest rates were observed in Alabama, and the highest rates in New Jersey and Utah. Higher rates were observed for white children and lower rates for black children and children of Latino backgrounds. Three to four times as many boys are diagnosed as girls; however, please note that the clinical picture of ASD appears very similar in both boys and girls (Reinhardt, Wetherby, Schatschneider, & Lord, 2015). Girls with ASD have higher rates of intellectual disability. Higher rates of ASD are a global phenomenon, with increases observed in multiple countries (Collishaw, 2015). Various hypotheses related to dramatic increases in prevalence rates, and varied rates across regions and ethnic groups, include the widening of diagnostic criteria (prior to DSM-5), greater awareness among parents and mental health professionals, better and earlier identification, as well as the possibility of a true increase in prevalence (Christensen et al., 2016; Lord & Bishop, 2015; Tager-Flusberg, 2014).

One of the most important consequences of any change in the conceptualization and identification of autism spectrum disorder involves access to mental health and educational services. Klin et al. (2000, p. 5) observed years ago that "decades of effective parent action in autism on the one hand and learning disabilities on the other hand have resulted in a relatively rich infrastructure of services for children with these conditions and their families, including better special education resources, entitlement programs, and more generally, increased awareness in the mental health and educational communities." With the DSM-5 changes, parent advocacy and organization (e.g., in Autism Speaks, autismspeaks.org), including children from one end of the autism spectrum to the other, continue to keep the research and clinical focus on appropriate and adequate services that enhance the well-being of children.

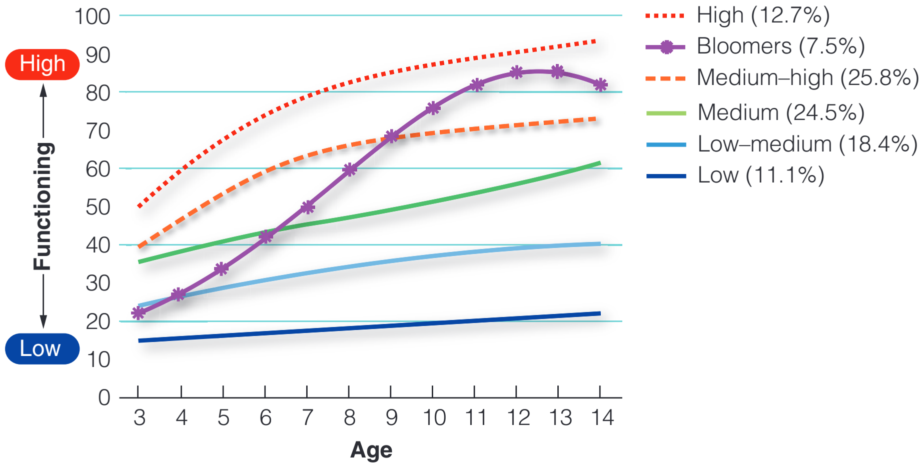
Developmental Course

Infancy and Childhood

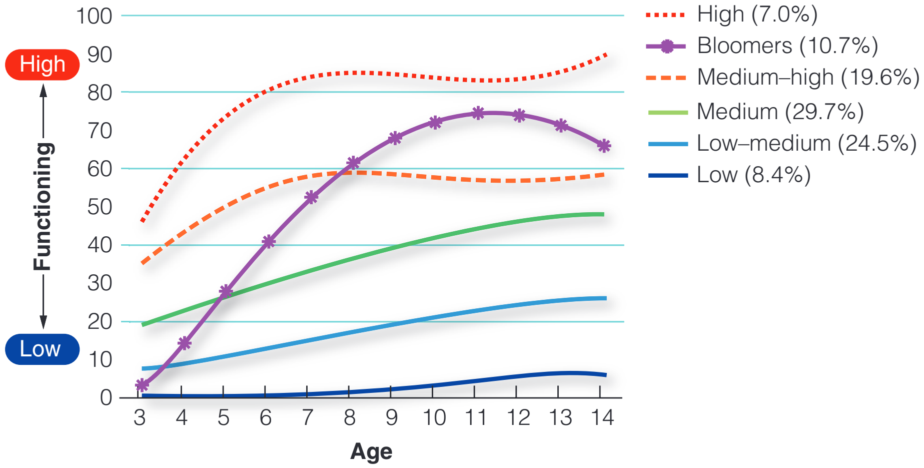
For almost all children, autism spectrum disorder is a lifelong disorder. Many cases of autism are identified in the first years of life; the average age of initial evaluation in a recent study was 40 months, with a confirmed diagnosis about a year later (Christensen et al., 2016). Although signs are often subtle, researchers have reliably identified early precursors—including deficits in eye contact, reduced social interest and impairments in social interaction, and atypical sensorimotor development—that reliably predict the emergence of autism spectrum disorder (Estes et al., 2013; Klin et al., 2015; Ozonoff et al., 2015; Tager-Flusberg, 2014). Earlier onset is often associated with severity of disorder (Estes, Zwaitenbaum et al., 2015). The characteristic symptoms of autism are in place between two and four years of age (Tager-Flusberg, 2014); by three years of age, the diagnosis of autism spectrum disorder is reliable and stable (Szatmari et al., 2016).

According to numerous studies, which often rely on parental reports, a significant minority of children diagnosed with autism spectrum disorder display regression. That is, some parents report that their children exhibit either an abrupt loss of skills (both language and social communication skills) or a more gradual deterioration over months (Szatmari et al., 2016; Tager-Flusberg, 2014; Yirmiya & Charman, 2010). Recent research suggests that "regression may take the form of a subtle plateauing, loss of engagement, or failure to acquire more sophisticated social-communication skills . . . rather than an identifiable loss of actual skills" (Lord & Bishop, 2015, p. 60).

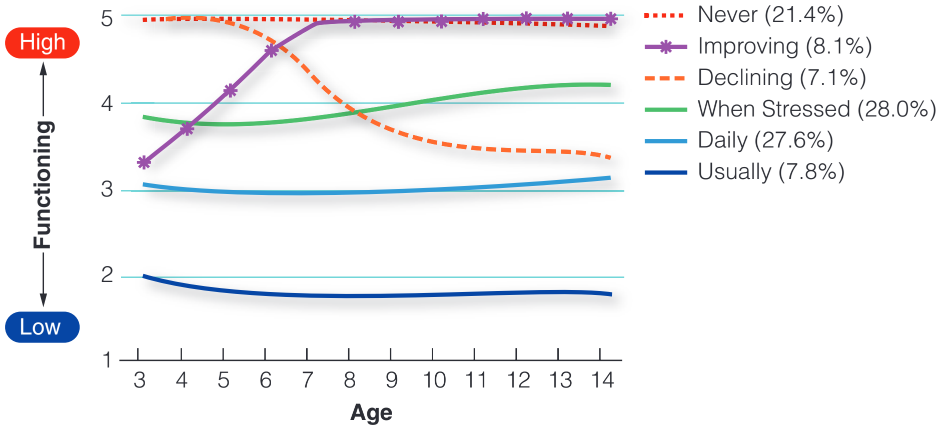
A number of developmental trajectories have been identified, with substantial heterogeneity observed in communication, social, and behavioral domains (Carr & Lord, 2010; Fountain, Winter, & Bearman, 2012; Szatmari et al., 2015) (see Figure 7:3). Please note that, as shown in Figure 7:3, improvement is more likely in the social and communication domains, with much of



A Communication trajectories



B Social trajectories



C Repetitive behavior trajectories

FIGURE 7:3 Multiple developmental pathways for ASD.

Source: Fountain, C., Winter, A. S., & Bearman, P. S. (2012), "Six developmental trajectories characterize children with autism." *Pediatrics*, 129, e1112–e1120. Reproduced with permission from *Pediatrics*, Copyright © 2012 by the AAP.

the improvement occurring early. Also note that there were groups of children, labeled "bloomers," who displayed major, rapid improvement. Children who were higher functioning at the time of diagnosis were those who were most likely to show significant improvement. Children who were also diagnosed with intellectual disability were much less likely to improve.

A recent longitudinal investigation followed children after diagnosis and described several clusters: a high-functioning group, a low-functioning group, and

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two groups in between with different combinations of verbal and nonverbal strengths and deficits (Kim, Macari, Koller, & Chawarska, 2016). The stability of the autism diagnosis was high (over 90%), with even higher stability in the children with the most severe clinical presentations. The stability was somewhat lower (approximately 85%) for children with less severe symptoms. Children in the highest-functioning group were those most likely to change diagnosis over time. It is clear that even with early identification, intensive treatment, and improvements in language and social communication, most children diagnosed with ASD in early childhood display persistent difficulties. These findings are consistent with other research on optimal outcomes. Optimal outcomes, reflecting enough improvements in overall functioning that the child no longer meets the criteria for a diagnosis of autism, are very infrequent. Most optimal outcomes are observed in children with more mild early presentations (Fein et al., 2013). Children with better cognitive functioning also have more of the very positive outcomes (Anderson, Liang, & Lord, 2014).

The acquisition of language is "the single most important factor predicting long-term outcomes for children with ASD," with gestural communication preceding language (Tager-Flusberg, 2014, p. 658). Approximately one-quarter of children with autism are nonverbal. For individuals who do develop language, the "pragmatic impairment may be the most stigmatizing and handicapping aspect of these disorders. From school age onward, individuals with Asperger syndrome report that their social language vulnerabilities give rise to anxiety, avoidance of some social situations, and self-image challenges and are a source of great concern to them. Adults with Asperger syndrome report having difficulty working at their jobs and establishing friendships due to their social communication impairment, despite being professionally productive and otherwise quite capable" (Landa, 2000, p. 125). The poignancy of the situation is clear for individuals with ASD, who, at each successive stage, are further compromised in their ability to deal with new challenges. This situation also illustrates in a very real way the notion of a *developmental disorder*, with different deficits and difficulties coming to the fore at various ages (Tantam, 2000, 2003).

With deficits in social perception, social cognition, and communication, we expect that children with ASD will struggle with establishing and maintaining rewarding relationships. For instance, only half of children with ASD who are in inclusive classrooms are involved in the social networks of their classrooms. Children with ASD are more likely to be isolated across all grade levels, and this difference is increasingly dramatic in later grades (Rotheram-Fuller, Kasari, Chamberlain, & Locke, 2010). However difficult interactions, friendships, and relationships may be, it is clear that children and adolescents with ASD desire connections with others (Causton-Theoharis, Ashby, & Cosier, 2009). Causton-Theoharis et al. provide this example from a journal of an individual with Asperger syndrome: "I was gradually becoming more and more aware of my loneliness and began to long for a friend. All my classmates had at least one and most had several. I would spend hours at night awake in bed looking up at the ceiling and imagining what it might be like to be friends with somebody" (Tammet, 2006, p. 74).

Repetitive behavior pathways display more stability than the social and communication pathways (Fountain et al., 2012). Most children (about 85%) continue to struggle from their diagnosis forward. Half of the children who do change significantly improve, and half deteriorate (Fountain et al., 2012). Children with higher nonverbal IQ scores show more improvement (Richler, Heurta, Bishop, & Lord, 2010). With respect to fixated interests over time, it is possible that "circumscribed interests involving particular expertise can sometimes be an asset, as older more able individuals find a niche in employment that makes good use of their special interests and expertise, for example high-level computer skills" (Leekam et al., 2011, p. 564).

An important concern over time is the development of internalizing and/or externalizing problems, especially in higher-functioning individuals (Lord & Bishop, 2015; Vaillancourt et al., 2016). As noted, many children with ASD struggle with other disorders and these may further complicate and compromise individual and interpersonal adjustment. Attention deficit hyperactivity disorder (ADHD) is frequently diagnosed (Johnson, Gliga, Jones, & Charman, 2015). Depression and anxiety are also common (observed in girls earlier, and in boys somewhat later) (Gotham, Brunswasser, & Lord, 2015).

Adolescent and Adult Outcomes

Many children display improvements in the core symptoms of ASD as they age, but approximately a third of children display deterioration following puberty (discussed in more detail in the upcoming section on etiology). Changes in patterns of cognitive strengths and weaknesses are the focus of ongoing research (Anderson et al., 2014; Lever & Geurts, 2016). Problematic emotion experiences, including increases in frustration and anger, coupled with poor emotion regulation may be observed (Patel, Day, Jones, & Mazefsky, 2016). Over time, lack of success in connecting with others, especially with peers, may elicit sadness, anxiety, and withdrawal for many older children and adolescents with ASD (Ghaziuddin, Ghaziuddin, & Greden, 2002).

The transition to adulthood requires planning for employment, educational opportunities, and social engagement (Wei, Wagner, Hudson, Yu, & Shattuck, 2015). There are increasing numbers of individuals with ASD who pursue postsecondary schooling, and resources and supports need to be in place for them. Individuals from higher socioeconomic backgrounds are more likely to enroll in postsecondary education. Part-time employment is much more common than full-time employment, and, again, resources and supports are often required for success. For individuals who are not in school or who are not employed, specific arrangements may facilitate social experiences.

Even with recent advances in early identification and early intervention, many adults with autism continue to have significant difficulties, living with their parents and experiencing ongoing social and vocational struggles (Bal, Kim, Cheong, & Lord, 2015; Howlin, Goode, Hutton, & Rutter, 2004; Rutter, Kim-Cohen, & Maughan, 2006). Indeed, in one study comparing adults with ASD and adults with intellectual disabilities, adults with ASD were less independent, had fewer social contacts, received fewer services, and had more unmet needs than adults with intellectual disabilities (Esbensen, Bishop, Seltzer, Greenberg, & Taylor, 2010). Addressing gaps in services and providing the opportunities for enhanced well-being across lifetimes is a pressing concern.

The Role of the Family

Parenting children with autism spectrum disorder is clearly a difficult task. Parents of children with ASD report higher levels of stress compared to parents of typically developing children, but also compared to parents of children with other developmental disabilities or disorders (Hayes & Watson, 2013). Parents report a number of major stressors, with somewhat different patterns of stress described by mothers and fathers (Bloch & Weinstein, 2010). There are different stressors associated with various times in the child's life (e.g., at diagnosis, entrance to school, or transition to adulthood) and with various tasks (e.g., identifying available services, accessing such services); support and resources for parents must be provided at multiple times (Barker, Hartley et al., 2011; Rivard, Terroux, Parent-Boursier, & Mercier, 2014; Taylor & Seltzer, 2011). Parenting stress, reflecting the match (or potential mismatch) between the demands of parenting a child with ASD and parents' perceptions of their parenting skills, must also be addressed (McStay, Dissanayake, Scheeren, Koot, & Begeer, 2014).

Siblings also are affected, and they display a range of emotions and responses to a brother or sister with ASD (Aronson, 2009). In the book *The Siege: A Family's Journey Into the World of the Autistic Child*, Clara Clairborne Park (1967/1995, p. 105), the mother of a child with autism, describes the adjustment required of the child's siblings: "It was hard for a little boy six and little girls nine and ten to put all their minds to choosing a Christmas present for their two-year-old sister's first real Christmas and know that in all probability she wouldn't look at it or them." As time went on, however, the siblings of Park's daughter accepted their sister for who she was and became an integral part of her increasing engagement with the world: "The best thing they could do for Elly, as she entered the world by slow degrees, was to be children with her, to play naturally and with enjoyment the games that came to me, at forty, with such difficulty and awkwardness. They carried her about, dressed her in clothes from the dress-up chest, rode her in the wagon, chased her on the grass." Given the difficulties that children and adolescents with ASD experience, sibling relationships across the lifespan, including into and throughout adulthood, are especially important to consider. The degree of involvement and support offered by siblings may have an especially meaningful impact on the well-being of individuals with ASD (Beyer, 2009; Orsmond & Seltzer, 2007).

Etiology

Early Hypotheses

In their early work, Kanner and Asperger focused on the physiological origins of autism, but these hypotheses were quickly displaced by psychosocial explanations more in tune with the psychoanalytic era. Most frequently associated with Bruno Bettelheim, these explanations focused on poor parenting and cool, distant "refrigerator mothers," whose infants intuitively understood that they were being rejected and so withdrew from all contact and relationships. The consequences of being blamed for a pervasively debilitating disorder in one's own child were devastating. In time—although much too late for many parents—these theories were completely discredited.

Contemporary research on autism acknowledges both genetic and phenotypic heterogeneity: "Any successful account of the 'final common pathway' for autism will have to account for why multiple different genetic, molecular, and neural factors can cause the same syndrome" (Johnson, Jones, & Gliga, 2015, p. 432). This is an example of *equifinality* (discussed in Chapter 3).

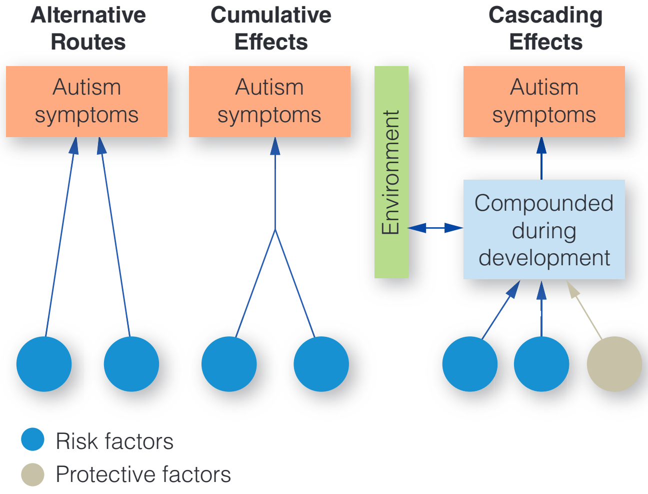

FIGURE 7:4 Multiple developmental pathways may lead to autism spectrum disorder.

Source: Gliga, Jones, Bedford, Charman, & Johnson (2014).

Examples of alternative routes, cumulative effect models, and cascading effect models are illustrated in Figure 7:4 (Gliga, Jones, Bedford, Charman, & Johnson, 2014). Cumulative models suggest that the number of atypical neurocognitive processes is related to the severity of the disorder, whereas cascading effect models assume that a few atypical processes set in motion a series of difficulties that are amplified over development (Gliga et al., 2014).

Prospective longitudinal studies provide much-needed data on the early signs of autism. These studies focus on infants at high risk for developing autism because they have a sibling with the disorder (Szatmari et al., 2016; Tager-Flusberg, 2014). Dawson's developmental model of autism (e.g., Dawson & Bernier, 2013; Dawson, Sterling, & Faja, 2009), describes multiple risk indices (including genes, prenatal factors, and early postnatal factors) that influence multiple risk processes (atypical brain development, brain-behavior links, atypical social interactions) that, in turn, lead to ASD outcomes in early childhood. In addition to examining early signs of disorder, these longitudinal studies require us to think carefully about high-risk siblings with more typical outcomes. That is, "are there protective factors that may be identified in infancy or toddlerhood that might explain why the majority of high-risk infants do not go on to meet criteria for ASD, even though they have many of the same indices (from genetics to phenotypes) as infants who do go on to have ASD" (Tager-Flusberg, 2014, p. 657). The most useful etiological models will address all of these developmental pathways.

Genes and Heredity

Autism spectrum disorder is associated with high heritability and familial clustering, with hundreds of genes identified as contributing to ASD risk (Dawson &Bernier, 2013; Jiang et al., 2013; Yirmiya & Charman,2010). Polygenic models of autism focus on the accumulating and cascading effects of multiple genes, with a mix of common risk variants and rare mutations (De Rubeis et al., 2014; Kiser et al., 2015; Sanders et al., 2012). Rare (*de novo*) mutations appear to be more frequent with older parents, especially older fathers (Kolevzon, Gross, & Reichenberg, 2007; Lundstrom et al., 2010). These models clarify the overlap between autism and other neurodevelopmental disorders such as intellectual disability and ADHD by identifying genetic mechanisms that disrupt multiple brain processes (De Rubeis et al., 2014; also see Figure 7:5).

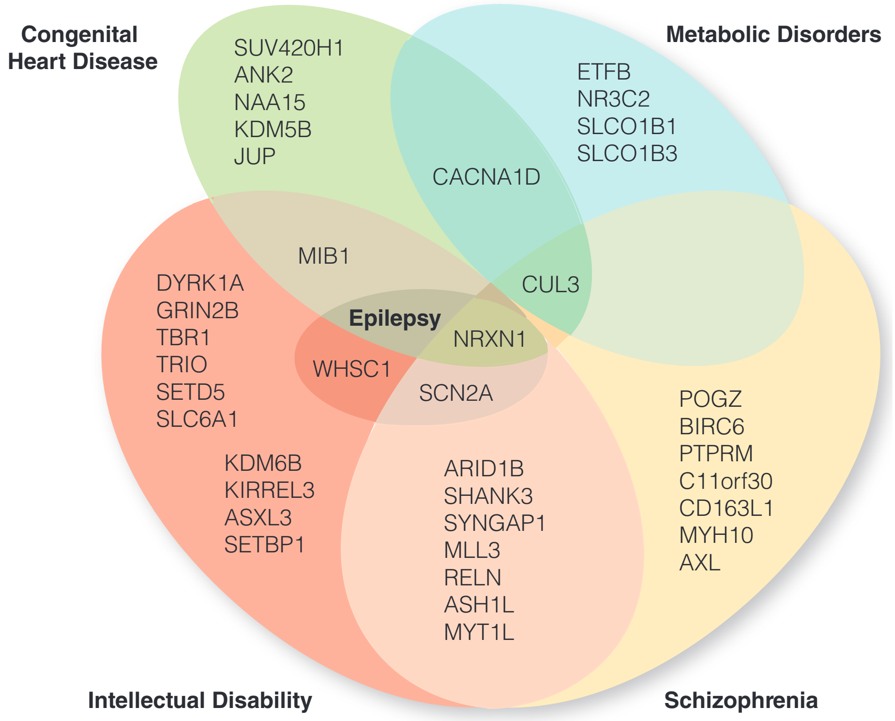

FIGURE 7:5 An illustration of the overlapping genetic variants for autism spectrum disorder and other disorders.

Source: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4402723/.

Gene-by-environment processes and interactions provide additional information about the development of ASD. Children who are more solitary by nature have different social experiences than children who are less solitary; these experiences "can lead to delays in social behavior over and above those that are more directly genetically influenced" (Meek, Lemery-Chalgant, Jahromi, & Valiente, 2013, p. 501). Gene-by-environment models must account for the ongoing influence of genes over the lifespan, gene-brain-behavior connections, and the influence of environmental factors at various developmental periods (Meek et al., 2013). Epigenetic processes such as DNA methylation are also the focus of promising research efforts (LaSalle, 2013; Loke, Hannan, & Craig, 2015).

Physiological Factors

Physiological factors influencing brain structure, brain organization, brain chemistry, and brain development help explain the multiple impairments observed in ASD. At the macro-level, there is abundant evidence that brain development is atypical. These unusual brain growth patterns in children with autism are described by Courchesne as "growth without guidance." The *growth dysregulation hypothesis* proposes that the normally well-controlled process of brain growth and organization goes awry, leading to the clinical symptoms of autism (Courchesne, Campbell, & Solso, 2011; Courchesne & Pierce, 2005). It appears that early brain overgrowth in both gray and white matter in the frontal and temporal regions during infancy and early childhood is followed by an accelerated rate of decline in size and possible further deterioration from adolescence forward (Courchesne et al., 2011; Tager-Flusberg, 2014).

At the micro-level, investigations of neuronal and synaptic growth and pruning, as well as methylation, also reveal atypical processes (De Rubeis et al., 2014; Kiser et al., 2015; Johnson et al., 2015). The *over-pruning hypothesis* describes "overly aggressive synaptic pruning" in the sensory and/or motor regions (Thomas, Davis, Karmiloff-Smith, Knowland, & Charman, 2015). Related research examines whether the increased head circumference observed in many children with autism reflects a delay in the pruning process (Johnson et al., 2015). Brain chemistry is also noteworthy (Corrigan et al., 2013). Current research examines the balance between inhibitory and excitatory neurotransmitters, with a focus on atypical signal-to-noise ratios in neural processing and poor-quality synaptic processing (Gliga et al., 2014; Johnson et al., 2015).

Dysfunction in the *mirror neuron system* has also been investigated (Oberman & Ramachandran, 2015). Mirror neurons are located in the cortical motor system and respond to the observation of others' motor acts. Mirror neuron activity is believed to underlie the understanding of motor acts done by others, as well as the intentions behind the actions (Rizzolatti, Fogassi, & Gallese, 2009). In children with ASD, dysfunction in the mirror neuron system may help explain the deficits in social cognition that are a core component of the disorder (Bernier & Dawson, 2009). According to the mirror neuron theory of autism, dysfunction "precludes the individual with autism from having an immediate, direct experience of the other through this internal representation. Social impairments, including impairments in imitation, empathy, and theory of mind, are hypothesized to cascade from this lack of immediate, experiential understanding of others in the social world" (Bernier & Dawson, 2009, p. 261).

Although there are additional data that highlight the roles of specific brain regions and processes [e.g., lateralized (left versus right hemisphere) abnormalities related to language areas (Eyler, Pierce, & Courchesne, 2012); inflammation and immune dysfunction (Loke et al., 2015)], there has been a major shift toward brainwide explanations (Gliga et al., 2014; Szatmari et al., 2016). These whole-brain approaches examine atypical connectivity across brain regions, with particular attention paid to circuits connecting social, cognitive, and emotional processes (Di Martino et al., 2014; Johnson et al., 2015; Matthews & Fair, 2015). Understanding both underconnectivity and overconnectivity is complicated and must take into account patterns of atypical connectivity over development (Picci, Gotts, & Scherf, 2016).

Johnson et al. (2015) describe several key characteristics of brain organization and function: *built-in redundancy*; *hierarchical organization*, with the prefrontal cortex "uniquely placed to influence other brain regions" (p. 428); *niche construction*, with an emphasis on individuals' active construction of their environments; and adjustment of *developmental rate*. For children with autism, the hypothesis is that "the attentional style characteristic of autism (i.e., overly focal, biased to simple repetitive events, and highly alert) is the result of an atypical brain adapting to the pace and quantity of information flow" (Johnson et al., 2015, p. 435). Redundancy, however, means that there may be ways to intervene so that individuals can "recruit compensatory networks" as a workaround for atypical network structure or function (Johnson et al., 2015, p. 433).

Child and Environmental Factors

The child factors that have been most frequently investigated are cognitive factors. Investigators have long attempted to identify an essential cognitive deficit that would explain the atypical development and impairment observed in children with ASD. With advances in understanding genetic and phenotypic heterogeneity, researchers are now focused on a multiple-deficit approach. The core cognitive skills that have received the most attention include ToM, central coherence, and executive function (Brunsdon & Happé, 2014; Pellicano, 2010, 2013b; Tager-Flusberg, 2014). As previously defined, theory of mind (ToM) refers to an ability to attribute mental states to others. Children and adults with autism are sometimes described as having *mindblindness* (Baron-Cohen, 1995, 2001), and the vast majority of them fail even simple ToM tests. Children and adolescents who understand very basic ToM tasks often do poorly on more sophisticated ones (Peterson, Wellman, & Slaughter, 2012). ToM deficits are one key factor contributing to the social and communication difficulties in ASD. Current ToM research (sometimes referred to as *mentalizing*) emphasizes a broadening of theory and assessment to better reflect the emergence and consolidation of ToM across development and a greater appreciation of individual differences in both typical and atypical populations (Apperly, 2012; Frith, 2012). The *central coherence hypothesis* is based on the idea that most individuals attempt to perceive and construct meaning from information that is part of an environmental whole (Frith, 2012; Frith & Happe, 1994). Information makes sense, or is coherent, because it is part of something larger than itself. Children and adolescents with autism are at a disadvantage because they process information piecemeal, in a more fragmented fashion (Frith & Happe, 1994). Interestingly, when cognitive tasks involve attention to detail, such as identifying embedded figures in a drawing, individuals with autism do better than individuals without autism (Baron-Cohen, 2010; Johnson et al., 2015). Indeed, the perceptual functioning of children with autism has sometimes been described as "enhanced." This is an example of a strength-based understanding of autism (Frith, 2012).

Executive functioning involves a variety of processes, including planning, memory, impulse control, and control of attention. Deficits in executive functioning are usually assumed to be linked to atypical brain organization and function in children with ASD (Keehn, Lincoln, Muller, & Townsend, 2010; Gliga et al., 2014). Strong executive function skills are conceptualized as a protective factor for siblings of children with ASD who do not go on to develop the disorder (Johnson, 2012).

Examining the cognitive profiles of children with autism over a three-year period, there was evidence for both stability and change (Pellicano, 2010, 2013b). When the children were five years old, more children displayed difficulties with all cognitive skills, with atypicalities in central coherence being more frequent than deficits in theory of mind or executive functioning. When the children were eight, fewer children displayed all the cognitive difficulties. Children displayed more improvements in theory of mind and executive function (compared to central coherence tasks). Improved language skills were associated with positive changes. Pellicano argues that it makes sense to think about these cognitive skills as dimensional (rather than all-or-none) and to explore connections among cognitive skills over time.

Baron-Cohen (2010) takes a somewhat different approach to atypical cognitive functioning. He describes the *empathizing–systemizing (E–S) theory,* which includes below-average empathy (indexed by poor performance on ToM tasks) and above-average systemizing. Systemizing is "the drive to analyze or construct systems" (Baron-Cohen, 2010, p. 129). Rules define systems, and these rules can be identified or discovered. Examples include mechanical systems (e.g., locks), numerical systems (e.g., timetables or calendars), natural systems (e.g., weather patterns), or abstract systems (e.g., musical notation).

In contrast to explanations focused on cognitive deficits and differences, *social motivation*—or *social brain—theories* of autism emphasize important socioemotional deficits related to social attention, social engagement, and social rewards (Dawson & Bernier, 2013; Gliga et al., 2014; Klin et al., 2015). Early difficulties with social behaviors lead to "potentially negative downstream consequences for social and language development and learning" (Dawson, Bernier, & Ring, 2012, p. 2). Evidence from functional imaging studies, electroencephalograph (EEG) studies, neuropsychological testing, and research related to deficiencies in the oxytocin system provides support for these theories (Dawson et al., 2012; Gliga et al., 2014). Other data, however, suggest that decreased social engagement may be "a consequence of difficulties in processing incoming social information (e.g., in processing biological movement and actions), rather than their cause" (Gliga et al., 2014, p. 194; also see Box 7:1).

A variety of prenatal and postnatal environmental factors have also been investigated. Prenatal toxin exposure, maternal infections, low birth weight, and respiratory distress during delivery are associated with higher rates of autism (Froelich-Santino et al., 2014; Kiser et al., 2015; Tager-Flusberg, 2014). The role of deprived experiences is underexplored. Additional research is needed in order to describe the mechanisms by which a disproportionate number of children reared in institutional settings go on to display symptoms of autism spectrum disorder (Levin, Fox, Zeanah, & Nelson, 2015). Childhood vaccines and immunizations have also been repeatedly and convincingly *ruled out* as causes of autism (Madsen et al., 2002, 2003; Offit, 2008; Schreibman, 2005).

A recent developmental model of autism provides an example of how multiple factors might together explain the emergence and course of autism spectrum disorder. In the *two-hit model of autism*, the first hit involves genetic and neurodevelopmental disruptions that lead to a vulnerable brain-behavior system and poor early childhood outcomes. The second hit comes during adolescence, when physiological changes (in brain organization and functioning and hormonal changes) are coupled with increased social challenges (Picci & Scherf, 2015; Scherf, Smyth, & Delgado, 2013; also see Figure 7:6). This model provides perspective on the "extensive ways in which adolescence may uniquely and negatively affect individuals with autism" (Picci & Scherf, 2015, p. 353).

Assessment and Diagnosis

As with many other diagnoses, there have been important changes in the classification and diagnosis of autism spectrum disorder over time. This is a time of transition for children and adolescents previously diagnosed with autistic disorder or Asperger syndrome or pervasive developmental disorder. The DSM-5 revisions to the diagnostic criteria are intended to more meaningfully reflect what we currently understand about autism spectrum disorder. These revisions will also affect children, families, teachers, and mental health professionals as they strive to understand particular children and their particular needs. Tony Attwood (1998) provides a useful analogy involving plaid fabrics. He says that almost everyone agrees that many different patterns are plaid but acknowledges that each specific pattern is unique. Children with autism spectrum disorder may all be thought of as wearing plaid clothes, yet each child's pattern of plaid is unique. However we come to understand the tremendous variability in this spectrum, we are ultimately responsible for understanding and treating the *child*, not his or her diagnostic label.

The first consideration in assessment is whether the core symptoms related to social and communication deficits and repetitive behaviors are present, and the degree of impairment associated with these deficits. Given that complex diagnoses require complex assessments, interdisciplinary teams that include medical, psychological, speech and language, and other professionals provide the most effective evaluations. Brief assessment as a part of well-child

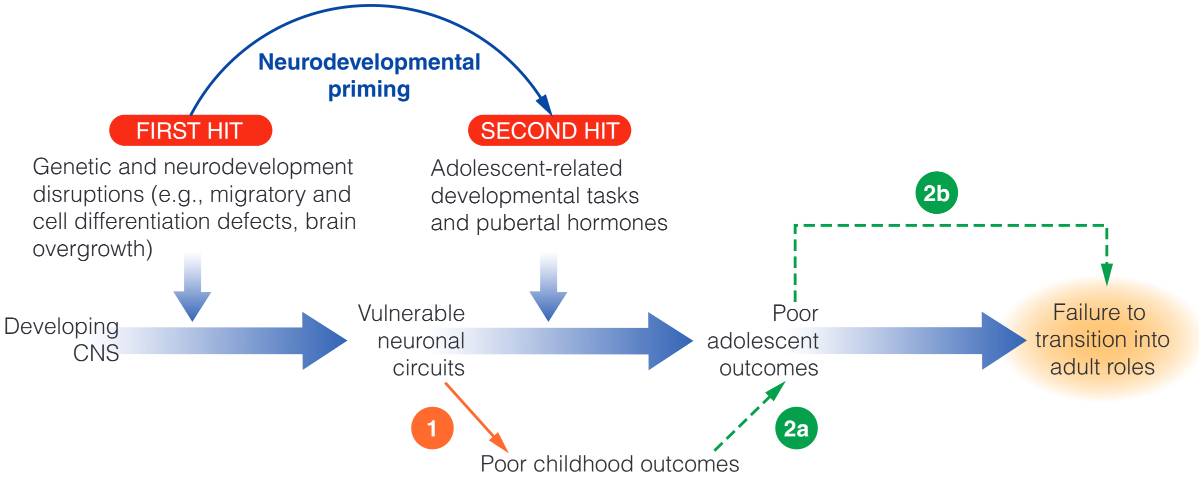
Neurodevelopmental priming
FIRST HIT
Genetic and neurodevelopment disruptions (e.g., migratory and cell differentiation defects, brain overgrowth)
SECOND HIT
Adolescent-related developmental tasks and pubertal hormones
Developing CNS
Vulnerable neuronal circuits
Poor adolescent outcomes
Failure to transition into adult roles
2b
1
2a
Poor childhood outcomes

FIGURE 7:6 An illustration of a developmentally informed two-hit model of autism.

Source: Picci & Scherf, 2015.

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visits to general practitioners and pediatricians is now standard. The American Academy of Pediatrics calls for screening for autism spectrum disorders as part of well-child checkups at 18 and 24 months of age, with appropriate referrals when necessary (Daniels, Hallady, Elder, & Dawson, 2014; Robins, 2008). Early screening of high-risk children (using, for example, eye tracking assessments or other biomarkers) presents special challenges related to ethical-, clinical-, and evidence-based assessment and intervention (Dawson & Bernier, 2013; Yirmiya & Charman, 2010; Zwaigenbaum et al., 2012).

Parent Interviews

Parent interviews are often the source of very useful information, including information about early development, medical history, and family background. A careful history involves much reliance on parent recall of past events, and retrospective data are sometimes unreliable. However, parental concerns must be taken very seriously (Glascoe, 1997, 2000; Goin-Kochel & Myers, 2005) because "parents *usually are correct* in their concerns about their child's development" (Filipek et al., 1999, p. 450; italics in original). Further, "parents rarely complain of social delays or problems, so any and all such concerns should be immediately investigated" (Filipek et al., 1999, p. 452). In addition to interviews, several parent-oriented diagnostic questionnaires are available.

Checklists, Rating Scales, and Observations

Autism spectrum disorder assessments have also been developed to aid the often difficult diagnostic process, and the design and refinement of valid, reliable, and practical measures are the focus of ongoing research. Two widely used and well-supported assessments are the Autism Diagnostic Observation Schedule (ADOS) and the Autism Diagnostic Interview-Revised (ADI-R) (Duku et al., 2013; Hus & Lord, 2014). Observational assessments require training and practice, but they are essential components of a comprehensive evaluation (Carr & Lord, 2009). Assessment of intelligence is a key component of any comprehensive assessment, but especially so for young children with ASD. Tests that take into account the child's verbal and social difficulties are necessary so that intelligence is accurately assessed.

Differential Diagnosis and Comorbid Disorders

With changing conceptualizations of autism spectrum disorder, the various ways in which children present symptoms, and the latest revision of diagnostic criteria, clinicians are likely to have a very difficult time with differential diagnosis. Language disorders must be ruled out (Carr & Lord, 2009; Rhea, Fuerst, Ramsay, Chawarska, & Klin, 2011). The diagnosis of intellectual developmental disorder requires special attention because some children are best diagnosed with intellectual developmental disorder alone, autism spectrum disorder alone, or both. As noted earlier, ADHD, tic disorder, mood disorders, and anxiety disorders are also frequently diagnosed in children with ASD (Matson & Cervantes, 2014; Salazar et al., 2015). Feeding and nutrition must also be carefully assessed, given the number of children with ASD who struggle with feeding problems (Sharp et al., 2013). Repeat assessments in adolescence and adulthood are required so that ongoing and/or new problems are appropriately identified and addressed (Baker & Blacher, 2015; Buck et al., 2014).

Intervention

Think about the clinical picture of autism spectrum disorder and how important it is to make the right treatment decisions. Now consider how parents and teachers of children with autism must feel as they consider the multitude of treatment options, some offering slow and steady progress and others promising miraculous improvements. Information about treatments is widely available. Mainstream media reports related to autism include information about empirically supported treatments, ineffective treatments, and potentially harmful treatments (Schreck, Russell, & Vargas, 2013). Parents often seek information, as well as support, from other parents on social media (Pickard & Ingersoll, 2015). It is not surprising, then, that parents sometimes embrace popular but useless strategies. Mental health professionals must work with parents to make informed, ethical decisions about intervention, addressing concerns about cost, time, and inaccurate assumptions about empirically supported treatments (Offit, 2008; Schreck & Miller, 2010). Although concern about autism spectrum disorder is high in many countries, we also must keep in mind the impact of culture and ethnicity on attitudes about autism, and the fact that

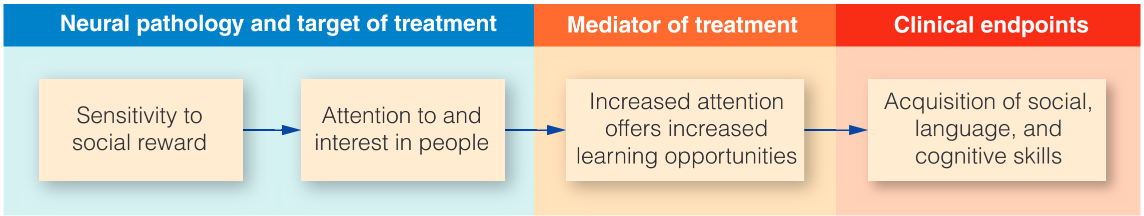
Neural pathology and target of treatment
Mediator of treatment
Clinical endpoints
Sensitivity to social reward
Attention to and interest in people
Increased attention offers increased learning opportunities
Acquisition of social, language, and cognitive skills

FIGURE 7:7 The role of social attention as an early indicator of treatment efficacy.

Source: Dawson, Bernier, & Ring, 2012.

children's access to autism-focused mental health care is limited in other countries with fewer resources (Minhas et al., 2015). Disseminating information about effective treatments, scaling up services for children, and training paraprofessionals to deliver high-quality treatments require the collaboration of researchers, clinicians, parents, governments, and agencies (Dawson & Bernier, 2013).

One last set of considerations: Researchers, clinicians, and parents must all manage expectations about outcomes (Dawson & Bernier, 2013; Fein et al., 2013). What are optimal outcomes? What does significant improvement look like? Is it reasonable to work toward goals that include typical functioning across social-communication and behavior domains? When is it appropriate to adjust treatment goals to the most positive adaptation to the characteristic features of ASD for the individual, his or her family, and the larger social environment? And how do we meaningfully include the goals of the children, adolescents, and adults who are diagnosed with autism spectrum disorder?

Prevention Efforts

The identification of high-risk siblings brings with it a number of ethical and practical issues related to the prevention of autism spectrum disorder and/or amelioration of early signs of autism spectrum disorder. We need to think about how best to talk with parents about risks, about interventions with empirical support, and about new interventions that do not yet have a strong research base in terms of preventing the development of ASD (Dawson & Bernier, 2013; Wallace & Rogers, 2010; Yudell, Tabor, Dawson, Rossi, & Newschaffer, 2012). With those issues in mind, there are a number of early intervention strategies that focus on improving social motivation, social reward, and social information processing; attentional and cognitive control; sensory-motor processing; and excitatory-inhibitory balance (Dawson et al., 2012; Gliga et al., 2014). Measures of social attention may be an important index of response to treatment (Dawson et al., 2012; also see Figure 7:7). Early training in attentional control seems to be associated with greater transfer of treatment gains, perhaps via its dynamic impact on brain development and organization (Wass, Scerif, & Johnson, 2012). Many of these early interventions are parent based, and training of parents (as well as support for parents who may be managing high expectations and variable results) is essential (Estes et al., 2013; Green et al., 2015; Rogers & Vismara, 2014; Siller et al., 2013).

Pharmacological Treatment

Given the evidence for genetic involvement in autism spectrum disorder, it is reasonable to examine pharmacological interventions. Those with autism are a "heavily medicated clinical population," with older individuals, individuals living in out-of-home settings, and individuals with intellectual disabilities most likely to receive medications (Martin, Patzer, & Volkmar, 2000, p. 217). The most frequently prescribed drugs include antidepressants, stimulants, and neuroleptics; none of these drugs is specific to autism (Esbensen, Greenberg, Seltzer, & Aman, 2009). For the most part, these pharmacological efforts have been ineffective in treating the core symptoms of autism (Pennington, 2002). As with intellectual developmental disorder, there are data that support the use of medications for frequently occurring comorbid disorders (Mohiuddin & Ghaziuddin, 2012). Recent work involving oxytocin-based treatments that target core social deficits have yielded positive results; these findings require additional research and replication (Dawson et al, 2012).

Psychological Treatment

The most effective treatments, based on years of clinical and empirical data, are the psychological treatments that emphasize social and behavioral techniques. Early and intensive interventions appear critical for meaningful improvement (Carr & Lord, 2009; Smith, 2010;

Vismara & Rogers, 2010). Common features of these interventions include significant time commitments (often more than 20 hours per week) and highly structured efforts to facilitate the acquisition of basic language and social skills. With this kind of time and effort, parents frequently serve as cotherapists, working with their children along with mental health professionals, teachers, and aides. Even with early, intensive treatment, there is significant variability in children's responses to interventions (Dawson & Bernier, 2013). For those children who display meaningful improvements, evidence suggests these gains are maintained over time (Estes, Munson et al., 2015).

One of the most widely used interventions is **applied behavior analysis**, developed by Ivar Lovaas (Lovaas, 1987, 1993, 2003; Lovaas & Buch, 1997). This is an intensive behavioral approach, with high levels of control and direction of the child and his or her environment. The approach begins as early as possible and involves more than 40 hours of intervention per week for two or more years. The focus is first on decreasing negative behaviors and then on increasing language and peer interaction. The introduction of new behaviors must take into account the positive, enjoyable aspects of prosocial actions (Smith, 2010). For some children, school readiness skills are included. The Lovaas approach is based on the discrete trial format, with a specific single behavior presented to the child by the therapist, and then an immediate reward for response and imitation. Over time, complex behaviors are built from simple ones.

Applied behavior analysis provides a framework for a number of related interventions that emphasize addressing deficits related to joint attention, executive function skills, language skills, and emotion skills (Dawson & Bernier, 2013; Johnson, 2012; Scarpa, Reyes, & Attwood, 2013; Soorya et al., 2015). Of particular note are the naturalistic developmental behavioral interventions that build on key components of applied behavior analysis, including manualized practice, individualized treatment goals, child-initiated teaching episodes, natural reinforcement, and setting up the environment to promote desired outcomes, and that emphasize activities that involve "emotionally significant social interactions" (Schreibman et al., 2015, p. 2416).

With respect to communication skills, broadening the behavioral approach to include the natural aspects of the child's world means that the repetition of words and skills, for example, is done in the most natural context to strengthen the pragmatic impact of learning. Social interventions might require children to focus on peer interactions and to practice their skills in the real-life settings of home and school (Krasny, Williams, Provencal, & Ozonoff, 2003; Paul, 2003).

Some of the specific deficits associated with autism spectrum disorder require creative strategies. One such technique involves using "thought bubbles" (used in cartoons and comic strips to indicate a character's thinking) to teach children with autism about the mental states of others (Wellman et al., 2002). Another approach is to provide socially relevant information in a compelling format, such as a puppet show (Corbett et al., 2016). Computers and smart phones are another treatment resource. Apps that prompt children and adolescents with social scripts or computer-based, serious game interventions that use components such as strong storylines or rewards to enhance learning or the generalization of learning are increasingly used as adjuncts to more traditional treatments (Joshi, 2011; Whyte, Smyth, & Scherf, 2015).

Other treatment considerations involve addressing related difficulties. These may include sleep interventions (Malow et al., 2016; Turner & Johnson, 2013) or interventions specifically focused on the daily living skills that are essential for independent living in adolescence and adulthood (Bal et al., 2015). Also included are interventions focused on comorbid disorders such as anxiety, depression, ADHD, or conduct problems (Lord & Bishop, 2015).

School-Based Programs

School-based services are limited by time, resources, and availability of trained personnel. Still, access to such services is one of the most frequently debated issues related to the change in the DSM-5 criteria for autism spectrum disorder. All children who struggle, with autism spectrum disorder and without, should be supported in their educational goals. Many have suggested that school services be decoupled from DSM diagnoses so that the child's particular learning, social, and behavioral problems guide eligibility and individual planning. The most common school services for children with autism spectrum disorder are classroom placement/inclusion, supportive services (such as occupational therapy, speech and language therapy, and social skills interventions), and special education designation (Spaulding, Lerner, & Gadow, 2016)

There have been significant funds invested in the education of children with autism spectrum disorder, and the gap between research on interventions that work and actual educational practices remains to be bridged (Parsons et al., 2013). The Treatment and Education of Autistic and (related) Communication-Handicapped Children (TEACCH) model is a comprehensive intervention with convincing empirical support (Mesibov, 1994, 1997; Schopler, 1998). The intervention has seven components: (1) improved adaptation, (2) parent collaboration, (3) individualized assessment, (4) teaching structure, (5) emphasis on skills, (6) usefulness of cognitive and behavior therapy, and (7) a generalist training model (see Box 7:3).

With respect to mainstream classrooms, there is little actual evidence that shows large or sustained benefits of inclusion for children with ASD (Klin & Volkmar, 2000; Mesibov & Shea, 1996). It may be that, unlike children with intellectual disabilities, children with autism display a range and severity of social deficits that make integration less likely to succeed. Intervening early to promote the development of social skills may have both short- and long-term benefits. Encouraging children's participation in popular peer activities (such as sports, music, or art) may be an important strategy that promotes positive social relationships in elementary school (Rotheram-Fuller, Kasari, Chamberlain, & Locke, 2010).

BOX 7:3

Clinical Perspectives

The TEACCH Model of Intervention

The TEACCH program, originally developed by Eric Schopler and colleagues at the University of North Carolina in the 1970s, is a broad-based treatment program for autism that has become a major intervention approach used in communities throughout the world (Schopler, Mesibov, & Hearsey, 1995). Along with other Comprehensive Treatment Models (CTMs), TEACCH has been shown to be especially effective as an integrated part of the school curriculum (Boyd et al., 2014). The TEACCH program is distinctive in its emphasis on careful individual assessment; its structured teaching program is based on that assessment and integrated into all aspects of the day-to-day life of children with autism spectrum disorder. The structured teaching plan includes careful organization of the physical environment and daily schedule, as well as clear expectations and rules. In addition, this approach advocates for an increased respect for what is called the "culture of autism." Understanding this culture involves recognizing the unique ways that individuals with autism view their environment and experience the physical and social world. Interventions, then, are designed to be consistent with this sensibility. Further, methods that emphasize the relative strengths of autism—such as strong memory, good visual processing skills, and recognition of details—are utilized and promoted wherever possible. These treatment principles are then integrated across systems and settings, including home and school, through comprehensive services such as social skills training, vocational training, and parent counseling and training. The TEACCH model has been adapted for use with ASD populations from early childhood through adulthood (Van Bourgondien & Coonrod, 2013), across cultural contexts, and across levels of disorder severity (Ichikawa et al., 2013).

Long-Term Treatment

Although psychological treatments for autism spectrum disorders necessarily target the child, the needs of the family also must be addressed (Carr & Lord, 2009; Steiner, 2011). Because in almost all cases of child disorder the "family is the child's best resource" (Filipek et al., 1999, p. 466), an assessment of the family's functioning and resources is important. Information and supportive services make a difference. As children with autism spectrum disorder age, intervention strategies and goals are likely to be revised, with specific treatments and supports designed for adolescents and adults (Van Bourgondien, Reichle, & Schopler, 2003). Residential options and vocational training are necessary components of developmentally appropriate plans. These are increasingly paired with available technologies that build on individual strengths in order to facilitate personal, social, and vocational skills and maximize each individual's potential and well-being (Diener, Wright, Wright, & Anderson, 2016; Hewitt et al., 2012; Mesibov, 1992; Van Bourgondien et al., 2003).

Key Terms

Autism spectrum disorder (ASD) (p. 108)
Social cognition (p. 109)
Joint attention (p. 110)
Theory of mind (ToM) (p. 110)
Affective social competence (p. 110)
Social and communication deficits (p. 111)
Restricted, repetitive behaviors (p. 114)
Fixated interests (p. 114)
Applied behavior analysis (p. 126)

Chapter Summary

- Autism spectrum disorder (ASD) is a broad term that is used in a variety of contexts, reflecting compromised development in social functioning and communication, as well as restricted, repetitive behaviors and fixated interests.
- Social cognition refers to the many ways that people think about themselves and their social worlds. Children with ASD display atypical social cognition.
- Theory of mind (ToM) refers to the ability to understand that others have their own mental state or perspective; it is an example of an important psychological process that is compromised in the development of autism spectrum disorder.
- Affective social competence—the coordination of emotional perception, experience, and communication—is another developmental achievement that is compromised in children with ASD.
- Although children with autism spectrum disorder are a heterogeneous group, all display quantitative and qualitative deficits in social and communication adaptation, as well as repetitive, restricted behaviors and fixated interests.
- Although the core symptoms of autism spectrum disorder are generally evident between two and four years of age, there are a number of developmental pathways that children exhibit.
- The core symptoms of autism spectrum disorder generally present lifelong challenges and compromised social functioning.
- A variety of physiological factors, including genetics, brain structure and function, and brain chemistry, are all being actively researched in an effort to identify causes of autism spectrum disorder.
- Child factors reflecting differences in the perception and processing of socially salient information are another set of factors that are being investigated in order to better explicate the etiology and course of autism spectrum disorder.
- The broad array of symptoms and varied degree of compromised functioning necessitates multiple assessment and intervention strategies. The most successful interventions are those that are delivered early and intensively across a variety of domains of functioning.

8 Maltreatment and Trauma- and Stressor-Related Disorders

CHAPTER OUTLINE

Developmental Tasks and Challenges Related to Stress and Coping

Maltreatment

The Case of Wyatt

Trauma- and Stressor-Related Disorders

The Case of Simone

Developmental Course

Maltreatment

BOX 8:1 CLINICAL PERSPECTIVES: Developmental Trauma Disorder

BOX 8:2 EMERGING SCIENCE: Maltreatment and Mood Disorders

The Case of Deion

Trauma- and Stressor-Related Disorders

Etiology

Maltreatment

Trauma- and Stressor-Related Disorders

Assessment and Diagnosis

Intervention

Treatment

Prevention

"IN THE UNITED STATES alone, over 900,000 children are maltreated every year, more than 13 million children live in poverty, and millions of children are raised in homes in which one or both parents suffer from some form of serious psychopathology. . . . All of these events and circumstances are characterized by stress and adversity in the daily lives of children" (Compas, 2009, p. 88). Given the high-risk status of these children and the potential for poor developmental outcomes, Compas says that the stakes are high, and he is absolutely correct in his assessment. Further, countless more children and adolescents, in the United States and around the world, encounter the kinds of traumatic events that overwhelm adult capacities for coping and adaptation. This chapter focuses on children and stress, including discussions of typical and atypical experiences of stress, disorders related to stress and trauma, and prevention and treatment efforts.

Developmental Tasks and Challenges Related to Stress and Coping

Stress occurs when the demands of the individual exceed his or her available resources. **Coping** involves the regulatory processes that are activated in response to stress (Compas, 2009). From birth onward, stressors abound. They include everyday events, such as parents leaving infants to go to work, physical exams and inoculations, playground mishaps, homework that is too difficult, conflicts with friends, and forgetting one's lines in a school play. They also include not-so-everyday events, such as the birth of a sibling, a move to a new state, failing a grade, and breaking up with one's first romantic partner. Each of these events requires some kind of response from a child or adolescent. Whether these coping efforts are successful or unsuccessful influences a number of important developmental outcomes.

The stress–response system is an evolutionarily influenced, hierarchically organized, and integrated brain-based system (Ellis, Jackson, & Boyce, 2006; Doom & Gunnar, 2013). Brain regions involved in stress responses include the hippocampus, the amygdala, and the prefrontal lobes, as well as the circuitry that connects those regions. Stress triggers the activation of the hypothalamus-pituitary-adrenal (HPA) axis and the release of stress hormones such as cortisol. Receptors for these stress hormones are located throughout the brain. The stress hormones initiate a coordinated physiological response involving autonomic, neuroendocrine, metabolic, and immune system components. Following activation of the stress system, feedback loops signal for regulation and shutdown of the HPA axis and a return to homeostasis (Doom & Gunnar, 2013; Lupien, McEwen, Gunnar, & Heim, 2009; Quas et al., 2014). Two constructs help describe this process: **allostasis**, "meaning the process of maintaining stability (homeostasis) by active means, namely, by putting out stress hormones and other mediators," and **allostatic load** (or allostatic overload), "meaning the wear and tear to the body and the brain by use of allostasis, particularly when the mediators are dysregulated, i.e., not turned off when the stress is over or not turned on adequately when they are needed" (McEwen, 2007, p. 874). The constructs of allostasis and allostatic load make clear the role of the brain in the regulation of feedback, that biological set points are dynamic (in that they respond to changing contexts), and that there are predictable variations in stress sensitivity across development (Karatoreos & McEwen, 2013).

The stress system is organized to expend both physiological and psychological energy as it attempts to meet typical (or expected) and atypical (or unexpected) demands. According to Gunnar and Loman (2011, p. 97), "If there is an immediate threat to our survival, we do not need to put energy into fighting off a virus, digesting our lunch, or growing an extra inch. We need that energy to fuel the mental and physical processes that increase our chances of surviving to face tomorrow. As this example suggests, stress is not necessarily detrimental. The capacity to mount an effective stress response allows us to adapt to the changing and sometimes extreme demands of our daily existence, to stretch our abilities, and to achieve more than we might were we to avoid situations of high demand." These high-demand circumstances need to be followed by periods of rest and repair. If they are not, there may be negative consequences, both in the immediate aftermath and in upcoming months and years.

The effects of stress are observed across the lifespan, from the prenatal period, across infancy and childhood, and through adolescence and adulthood. A "life cycle" model of stress describes changes in various brain structures related to the timing of stress (see Figure 8:1). Exposure to prenatal and postnatal stress has programming effects

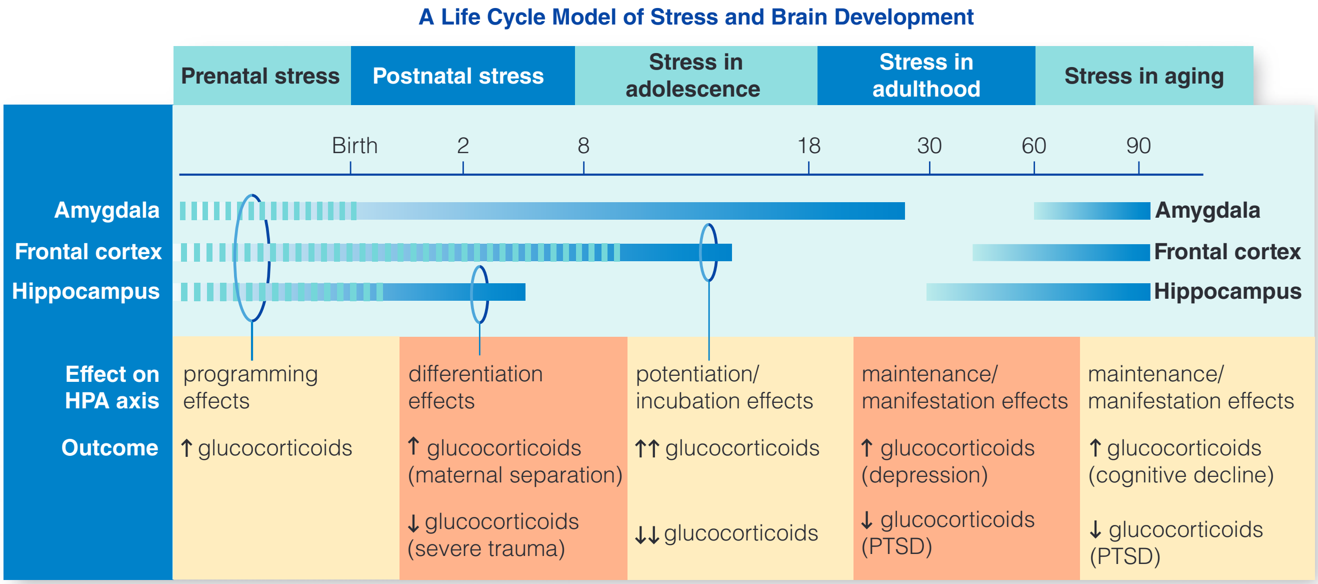

FIGURE 8:1 Changes in various brain structures are influenced by the timing of stressful experiences.

Source: Lupien, S. J., McEwen, B. S., Gunnar, M. R., and Heim, C. (2009). Effects of stress throughout the lifespan on the brain, behaviour, and cognition. *Nature Reviews/Neuroscience, 10,* 434–445. Reprinted by permission from Macmillan Publishers Ltd: Nature Reviews/Neuroscience, copyright © 2009.

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on the developing brain and HPA axis (Doom & Gunnar, 2013; Fox, Levitt, & Nelson, 2010). These programming effects involve changes in gene function (i.e., not in the genetic code or composition, but in the way in which the genetic information operates). These effects are examples of **epigenetics**, or the environmental regulation of gene expression (McGowan & Roth, 2015; Meaney, 2010; also summarized in Box 2:1 in Chapter 2).

Early adversity appears to alter the magnitude of the stress response (usually in the direction of hyperreactivity, but also sometimes hyporeactivity) and the poor regulation of that response (Meaney, 2010; Obradović, 2012). In addition, epigenetic mechanisms such as methylation help account for the links between exposure to extreme stress in early life and higher rates of poor physical and mental health outcomes in children (Romens, McDonald, Svaren, & Pollak, 2015; Szyf, 2013). As described in Chapter 2, this is a key explanation for how *adversity gets under the skin* and, in so doing, influences a range of poor outcomes. The experience of stress in early development is buffered by responsive caregiving. Indeed, research has confirmed "the incredible importance of the attachment relationship in regulating stress in infancy," (Gunnar, 2016, p. 181), and current studies are focused on better understanding the mechanisms and outcomes of social buffering across childhood, adolescence, and adulthood (Gunnar, 2016; Hostinar, Sullivan, & Gunnar, 2014).

Investigations of other developmental periods also provide critical information about the stress-response system. Adolescence is associated with heightened responses of the HPA axis, and adolescent brain development (especially in the frontal cortex) is likely affected by this activity (Ganzel, Kim, Gilmore, Tottenham, & Temple, 2013; Karatoreos & McEwen, 2013). Compared to early childhood, there is relatively less parental buffering of the stress–response system, so demands on that system—particularly social demands or social threats—may be especially challenging (Doom, Hostinar, VanZomeren-Dohm, & Gunnar, 2015). Given the increasing emphasis on peer relationships, the resolution of these types of stressful social experiences may be particularly meaningful (Gunnar, 2016; Karatoreos & McEwen, 2013). In addition to the immediate consequences of these new experiences, the cumulative effects of early adversity are observed in adolescence (Lupien, McEwen, Gunnar, & Heim, 2009). Individual differences in stress reactivity and regulation are linked to both genes and experience. As noted, one very important contributor to individual differences in the pathways and organization of the stress–response system is early caregiving and attachment security. Temperament (e.g., high reactivity) is another factor that influences the development and functioning of the stress response system (Gunnar & Quevedo, 2007; Obradović, 2012). High-risk families, in which interparental conflict and aggression are present, are another source of variation in children's stress responses (Davies, Cicchetti, & Martin, 2012; Repetti, Robles, & Reynolds, 2011). One environmental factor with significant impact is poverty. Growing up in impoverished circumstances is associated with chronic stress and increased allostatic load (Blair, Raver, Granger, Mills-Koonce, & Hibel, 2011; Evans & Kim, 2013). Adverse environments may be especially challenging for highly reactive children, who are more responsive than less reactive children to both highly supportive and highly stressful environments—that is, the *orchid* and *dandelion children* described in Chapter 5, Box 5:1 (also see Boyce, 2016; Conradt, Measelle, & Ablow, 2013; Pluess, 2015).

Early adversity is often discussed in tandem with **toxic stress** (Shonkoff et al., 2012). The National Scientific Council on the Developing Child describes three types of stress responses observed in young children. *Positive stress responses* include brief, mild-to-moderate responses, usually with a supportive caregiver (e.g., dealing with everyday frustration or typical experiences such as the first day of preschool). *Tolerable stress responses* involve atypical stressors (such as serious illness, frequent interparental conflict, or a natural disaster) that trigger a more widespread and possibly longer-lasting response. For many children in these situations, protective adults help to buffer the stress response and promote a return to typical functioning. *Toxic stress responses* are the result of "strong, frequent, or prolonged activation of the body's stress response systems in the absence of the buffering protection of a supportive, adult relationship" (Shonkoff et al., 2012, p. e236). Toxic stress is associated with permanent changes in the structure and function of the brain and stress-response systems. It is important to emphasize that children are not just passive recipients of stress; they are also active agents in dealing with it. Indeed, as noted, exposure to multiple instances of stress (or challenge) may be necessary for the typical development of problem-solving or coping strategies (Grant et al., 2014). Zimmer-Gembeck and Skinner (2011) provide a developmental framework for thinking about coping. In their framework, they describe age-related transitions in 12 "families of coping and adaptive processes" (see Table 8:1). Their descriptions "allow the identification of healthy pathways through which children

TABLE 8:1 Families of Coping Strategies

Problem Solving
Strategizing
Instrumental action
Planning

Information Seeking
Reading
Observation
Asking others

Helplessness
Confusion
Cognitive interference
Cognitive exhaustion

Escape
Behavioral avoidance
Mental withdrawal
Denial
Wishful thinking

Self-Reliance
Emotion regulation
Behavior regulation
Emotional expression
Emotion approach

Support Seeking
Contact seeking
Comfort seeking
Instrumental aid
Social referencing

Delegation
Maladaptive help seeking
Complaining
Whining
Self-pity

Social Isolation
Social withdrawal
Concealment
Avoiding others

Accommodation
Distraction
Cognitive restructuring
Minimization
Acceptance

Negotiation
Bargaining
Persuasion
Priority setting

Submission
Rumination
Rigid perseveration
Intrusive thoughts

Opposition
Other-blame
Projection
Aggression

Source: Zimmer-Gembeck, M. J., and Skinner, E. A. (2011). The development of coping across childhood and adolescence: An integrative review and critique of research. *International Journal of Behavioral Development, 35,* 1–17; copyright © 2011 by Sage Publications. Reprinted by permission of SAGE.

can acquire robust resources for dealing constructively with challenges, obstacles, failure, and loss" (Zimmer-Gembeck & Skinner, 2011, p. 1). The various types of coping responses in each family are constrained by age and ability; each is also linked to more- and less-likely positive outcomes (Eisenberg, Valiente, & Sulik, 2009). For each family of coping responses, a developmental progression can be described. Examples of this developmental progression are provided in Figures 8:2 and 8:3 for the problem-solving and support-seeking families of coping responses.

According to Zimmer-Gembeck and Skinner (2011), age-related transitions in coping occur from infancy to toddlerhood (about age 2); between ages 5 and 7; from late childhood to early adolescence (from ages 10 to 12); from early to middle adolescence (from ages 14 to 16); and from middle to late adolescence (from ages 18 to 22). Among the most common types of coping, across much of development, are problem solving, support seeking, distraction, and escape. Escape is the most common maladaptive strategy. There are certainly developmentally influenced changes in the frequency of use. In the preschool period, for instance, "young children seek support from adults or use overt behaviors to get what they want." Support seeking seems to be an "all-purpose strategy," and escape is the "primary alternative" when other strategies are ineffective (Zimmer-Gembeck & Skinner, 2011, p. 12). In middle childhood, children "become increasingly self-reliant and their coping strategies become more differentiated and sophisticated" (p. 12). Cognitive

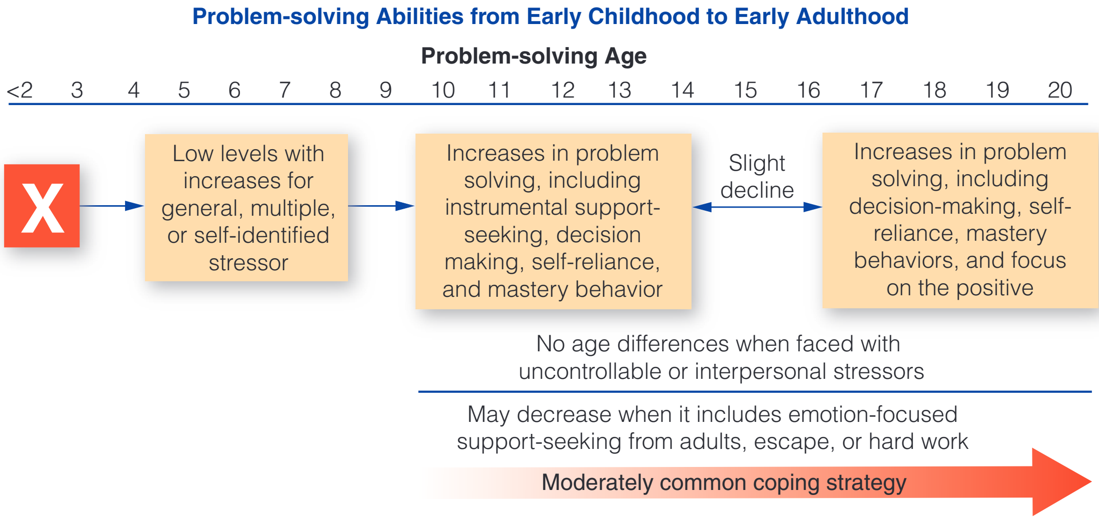
Problem-solving Abilities from Early Childhood to Early Adulthood
Problem-solving Age
<2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
X
Low levels with increases for general, multiple, or self-identified stressor
Increases in problem solving, including instrumental support-seeking, decision making, self-reliance, and mastery behavior
Slight decline
Increases in problem solving, including decision-making, self-reliance, mastery behaviors, and focus on the positive
No age differences when faced with uncontrollable or interpersonal stressors
May decrease when it includes emotion-focused support-seeking from adults, escape, or hard work
Moderately common coping strategy

FIGURE 8:2 Summary of key achievements in the developmental progression of problem solving.

Source: Zimmer-Gembeck, M. J., and Skinner, E. A. (2011). The development of coping across childhood and adolescence: An integrative review and critique of research. *International Journal of Behavioral Development, 35,* 1–17; copyright © 2011 by Sage Publications. Reprinted by permission of SAGE.

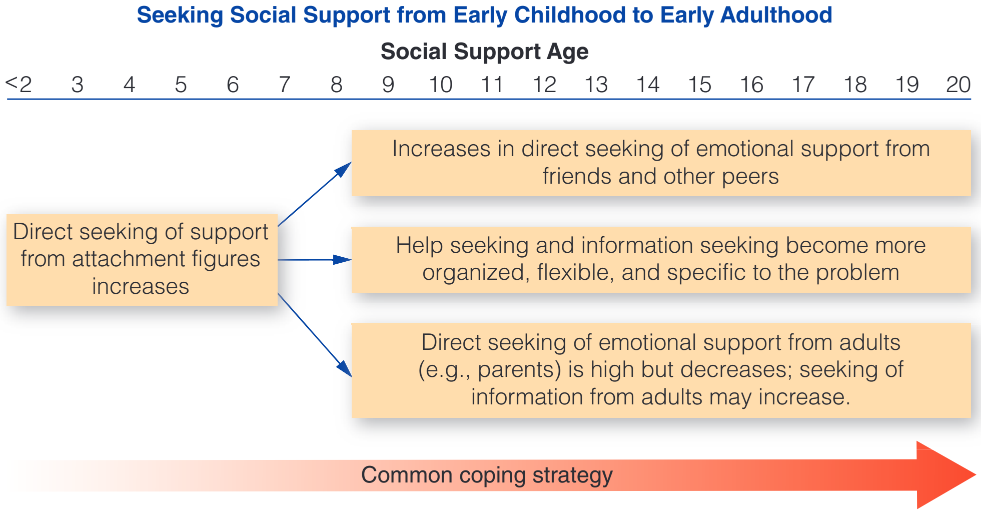
Seeking Social Support from Early Childhood to Early Adulthood
Social Support Age
<2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Direct seeking of support from attachment figures increases
Increases in direct seeking of emotional support from friends and other peers
Help seeking and information seeking become more organized, flexible, and specific to the problem
Direct seeking of emotional support from adults (e.g., parents) is high but decreases; seeking of information from adults may increase.
Common coping strategy

FIGURE 8:3 Summary of key achievements in the developmental progression of seeking social support.

Source: Zimmer-Gembeck, M. J., and Skinner, E. A. (2011). The development of coping across childhood and adolescence: An integrative review and critique of research. *International Journal of Behavioral Development, 35,* 1–17; copyright © 2011 by Sage Publications. Reprinted by permission of SAGE.

strategies are increasingly deployed, and support seeking appears more focused. In adolescence, there is an overall increase in coping repertoires, with more planful problem solving and better emotion regulation, as well as the matching of coping strategies to types of stressors.

There are several key distinctions related to coping. The first is the distinction between *automatic* and *controlled processes*. In the memory system, for example, biases to attend to threatening information are automatic, whereas the purposeful shifting of attention observed in distraction is controlled (Compas, 2009). Another distinction involves *antecedent regulation* (i.e., coping that anticipates a psychologically demanding event) and *response-focused regulation* (i.e., coping that follows the psychologically demanding event) (Ochsner & Gross, 2008). Differences in the motives and goals associated with coping, such as those related to personal well-being and/or the well-being of others, must also be considered. Differences in goals may also be linked to whether stress is controllable or uncontrollable (Compas, 2009).

Many factors influence individual differences in coping repertoires and coping success. These include physiological factors, like brain development; psychological factors, such as temperament and the development of the self; and social factors, including parent and peer relationships (Compas, 2009; Kopp, 2009; Wadsworth, 2015). Parent support of children's coping, as well as parent assistance, may be especially important when high levels of stress are encountered and/or when the child's coping resources are taxed (Abaied & Rudolph, 2010; Pomerantz & Thompson, 2008; Wadsworth, 2015). Abaied and Rudolph (2010) provide a detailed description of the role of parents in the socialization of children's coping. In their description, parents both instruct and model a variety of coping strategies. Engagement strategies include problem solving, support seeking, and positive thinking. Disengagement strategies include avoidance and denial. Parents can also reinforce or redirect children's coping. And, of course, parents' contributions to children's coping can be helpful or ineffective.

Overall, across development, the ongoing interactions of stress and coping are evident every day. For many children, whose stressful experiences are typical and whose coping is supported by concerned adults, these interactions contribute to a sense of self-efficacy, accomplishment, and well-being. For other children, whose stressful experiences are unusually frequent and severe and whose coping is not adequately supported, developmental outcomes are more likely to include significant distress and dysfunction. These children and their experiences are the focus of the rest of this chapter.

Maltreatment

The Case of Wyatt

Wyatt is a four-year-old boy who was recently removed from his home and placed in foster care along with his younger sister. Until recently, Wyatt and his sister lived with his mother and her current boyfriend in a somewhat isolated rural community. Wyatt's mother has struggled with polydrug addiction, including alcohol and methamphetamine, since before Wyatt's birth. Although not physically abusive to her children, Wyatt's mother's cycle of addiction, recovery, and relapse has led to multiple periods of physical neglect and emotional unavailability.

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Wyatt was removed from the home by child protective services when he was one year old, when a visiting county social worker found him suffering from severe neglect, including untreated eye and ear infections and signs of malnutrition. He spent several months in a foster home while his mother completed a rehab program and gave birth to his sister. Wyatt was then returned home, where he and his sister lived for the next three years. During this time, Wyatt's mother continued to cycle through periods of active drug and alcohol abuse followed by brief periods of sobriety.

While assessing Wyatt as part of a prekindergarten screening program, the evaluator noted multiple bruises on Wyatt's face and legs. A follow-up evaluation by child protective services found further bruising on Wyatt's back and buttocks. Wyatt told the child protection worker that his mother's boyfriend routinely struck him with his hand or a stick in response to any behaviors of which he disapproved. This included even mild oppositional behavior, as well as unintentional behaviors such as wetting the bed or spilling a drink. Wyatt's mother confirmed that the abuse had been occurring, but she defended her boyfriend by noting that he behaved violently only when drunk or high and was otherwise kind to her and provided for her family. Following the investigation, both Wyatt and his sister, who was not physically abused, were removed from the home and placed in separate foster care homes. Wyatt's mother again entered a residential treatment program, and her boyfriend was arrested and charged with multiple counts of child abuse.

Wyatt now lives with experienced and loving foster parents and is enrolled in a therapeutic preschool. Wyatt's foster parents express surprise that he almost never mentions his mother or sister. They report that he settled quickly into his new surroundings and routine. Both at home and at preschool, Wyatt is noted to be acutely aware of and reactive to even mild disapproval. In fact, he quickly recognizes frustration or anger in his environment even when it is not directed toward him. Over time, Wyatt has become more trusting of his foster parents, though he also becomes anxious if he is not in the same room as them. Wyatt has struggled to manage the complexity and energy typical of a preschool classroom. He has difficulty joining in with other children and becomes easily frustrated and emotionally reactive to even minor frustrations and problems. At such times, he may exhibit either internalizing behaviors, such as hiding or crying; or externalizing behaviors, such as throwing toys or hitting other children.

Further assessment indicates that Wyatt is experiencing mild-to-moderate delays in general cognitive functioning and expressive language ability. Wyatt's teachers are developing a comprehensive plan combining structured, small-group play opportunities with speech therapy and remedial school readiness training. All those currently working with Wyatt remain both hopeful that he can continue to make progress and concerned about whether or not his mother will choose for Wyatt to continue the current therapeutic program if he returns home to live with her. ■

As described in Chapter 3, **maltreatment** is a broad category including physical abuse, sexual abuse, psychological abuse, and neglect, reflecting the "gross violation of the rights of a vulnerable and dependent child" (Cicchetti & Toth, 1995, p. 541). *Child maltreatment is not a diagnosis* that is assigned to a child. Rather, as emphasized in many other chapters, it is a risk factor that is associated with the increased likelihood of immediate, short-term, and long-term negative developmental outcomes (Cicchetti, 2016). Indeed, "although the thought of a maltreated child conjures up images of head trauma, bruises, broken bones, malnutrition, and the like, it appears that emotional damage, not physical damage, may exert the most long-term harmful effect" (Cicchetti & Toth, 2003, p. 190).

Definitions of maltreatment vary, depending on context and culture, professional background, and purposes of definition (e.g., involving lawmakers and legal issues or mental health professionals and treatment issues). Even so, basic definitions can be provided (Cicchetti, 2016). **Sexual abuse** involves sexual contact or attempted sexual contact between an adult and a child. **Physical abuse** refers to injuries that are inflicted by nonaccidental means. **Neglect** involves failure to provide minimum standards of care (e.g., regarding shelter, safety or supervision, nutrition) that leads to harm or endangerment. **Emotional (or psychological) abuse** refers to ongoing and extreme disregard or thwarting of basic emotional needs. Additional classification considerations include the frequency, severity, and timing of maltreatment.

Maltreatment has been conceptualized as a "failure of the average expectable environment" (Cicchetti & Valentino, 2006). "For infants, the expectable environment includes protective, nurturant caregivers and a larger social group to which the child will be socialized, whereas for older children, the normative environment includes a supportive family, a peer group, and continued opportunities for individuals to dynamically

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Although physical signs are frequently evidence of maltreatment, long-term emotional damage is an especially concerning outcome of all types of abuse.

engage in the construction of their own experiences" (Cicchetti & Valentino, 2006, p. 129). Maltreatment, then, reflects the breakdown of the most basic set of expectations for safety and security.

Children are most vulnerable in the first five years of life, with high rates of victimization and death related to maltreatment (Cicchetti & Banny, 2014; Lieberman, Chu, Van Horn, & Harris, 2011). As noted in Chapter 3, child neglect is the most common form of maltreatment and parents are the most frequent perpetrators (Cicchetti & Banny, 2014). Many cases of maltreatment involve both abuse and neglect. Although it is imperative to account for sociocultural factors (described in more detail in the etiology section), higher rates of maltreatment are reported for African American, Native American, and multiracial children; for children from single-parent families; and for children living in poverty (Cicchetti & Valentino, 2006; Lieberman et al., 2011). Once maltreatment reports are made to child protective services, children from minority backgrounds are more likely to be placed out of home and stay longer in foster care. They are also less likely to be reunited with parents (Lieberman et al., 2011).

Trauma- and Stressor-Related Disorders

The Case of Simone

Simone is eight years old and in third grade. Until recently, she lived with her mother in an apartment in the city. Simone's parents had a highly conflict-filled relationship and had been separated for several months following an incident in which police responded to a domestic dispute call and found her mother badly bruised and reporting that her husband had hit her. Frightened and confused by her husband's erratic behavior, Simone's mother obtained a restraining order in an effort to keep herself and Simone safe.

Simone, aware of her parents' conflict, was becoming increasingly anxious and protective of her mother. After a quiet period of several weeks, Simone woke one night to a loud argument and realized that her father was in the house. Eventually, Simone fell back asleep. In the morning, she went looking for her mother after calling to her but receiving no answer. Simone found her mother's body on the kitchen floor in a pool of blood. Slowly realizing that her mother was dead, Simone, confused and in shock, remained alone with her mother's body for several hours until a concerned neighbor, who had heard the argument the night before, let herself into the apartment, called the police, and took Simone to stay with her in her nearby apartment.

In the weeks following this traumatic incident, Simone went to live with her maternal grandmother. Her grandmother reports that, prior to the murder of Simone's mother, Simone was a generally shy, quiet, and guarded girl. Although she tended to be somewhat anxious in new situations, Simone would usually become comfortable after a short time and enjoyed being with friends, both at school and in the neighborhood. However, since the day she found her mother's body, she has been especially withdrawn, resists going to school, and has been unable to answer questions about finding her mother's body. Simone now complains of frequent nightmares and insists on sleeping with her grandmother. She appears tired most days, is emotionally reactive, and reports experiencing frequent stomachaches.

Simone has recently begun seeing a therapist who specializes in working with children who experience trauma. Although still unable to describe the events surrounding her mother's death, Simone has begun to draw pictures that include her mother. These pictures likely represent initial attempts to work through the complex psychological effects of the trauma. For example, Simone has drawn a series of pictures of her mother encountering threatening creatures such as ferocious dinosaurs and monsters. Proceeding slowly and carefully, Simone's therapist has begun to help her talk about these drawings in some detail. Although this is a tentative and indirect process at this point, Simone has begun to organize and acknowledge some of the thoughts and feelings related to both the sudden loss of her mother and the traumatic experience of finding her body. Some of Simone's more challenging symptoms—such as emotional volatility and sleep disturbance—have begun to lessen in intensity and frequency. However, others—such as difficulty separating from her grandmother—have shown little change. ■

"Bad things happen. As much as we might wish otherwise, close friends and relatives die, painful things happen to our bodies, there are natural disasters and war, and sometimes people do senselessly horrible things to other people" (Bonanno & Mancini, 2008, p. 369). When traumatic events occur, many children and adolescents experience distress and dysfunction. There are a number of types of trauma- and stressor-related disorders in DSM-5. Reactive attachment disorder and disinhibited social engagement disorder, already presented in Chapter 5, are included in this category. And, as described in Chapter 5, maltreatment is the key factor in the development of disorders of attachment. **Acute stress disorder** involves the display of multiple symptoms from any combination of categories (e.g., related to intrusion, dissociation, avoidance, and arousal) following exposure to a traumatic event. Acute stress disorder is diagnosed when the duration of symptoms lasts up to one month. **Posttraumatic stress disorder (PTSD)** involves the experience of trauma and the display of symptoms from each category; PTSD is diagnosed when symptoms last longer than one month (see Table 8:2). Intrusion symptoms include recurrent memories of the trauma, frightening dreams, or flashbacks. Avoidance symptoms include efforts to avoid people, places, or situations that are associated with the trauma. Alterations in cognition or mood include dissociative symptoms (such as difficulties with memory), negative beliefs about the self or others or the world, or persistent negative mood (such as fear, anxiety, or shame). Alterations in arousal and reactivity include hypervigilance, irritability, and extreme responses.

For many years, young children were not diagnosed with PTSD; their developmental status was thought to

TABLE 8:2 Posttraumatic Stress Disorder: Summary of DSM-5 Diagnostic Criteria

A. Exposure to actual or threatened death, serious injury, or sexual violence, including:
  1. Directly experiencing the traumatic event
  2. Witnessing the traumatic event *(especially primary caregivers)*
  3. Learning of trauma occurring to close family member or friend *(parent or caregiving figure)*
  4. Experiencing repeated or extreme exposure to aversive details of trauma

B. Intrusion symptoms associated with the trauma, including:
  1. Recurrent, intrusive memories of traumatic event *(may be expressed in play reenactment)*
  2. Recurrent distressing dreams related to the trauma
  3. Dissociative reactions, such as flashbacks *(may be manifest in play)*

C. Persistent avoidance of stimuli associated with the trauma as evidence, for example:
  1. Avoidance of distressing memories, thoughts, or feelings associated with the trauma
  2. Avoidance of external reminders that arouse distressing memories

D. Negative alterations in cognitions and mood associated with the trauma, including:
  1. Inability to remember important aspects of the traumatic event
  2. Persistent and exaggerated negative beliefs about oneself, others, or the world
  3. Persistent distorted cognitions about the cause or consequence of the trauma
  4. Persistent negative emotional state
  5. Diminished interest in significant activities *(including constricted play)*
  6. Feelings of detachment or estrangement from others *(social withdrawal)*
  7. Persistent inability to experience positive emotions

E. Alterations in arousal and reactivity, as indicated by symptoms such as:
  1. Irritable behavior and angry outbursts *(temper tantrums)*
  2. Reckless or self-destructive behavior
  3. Hypervigilance
  4. Exaggerated startle response
  5. Problems with concentration
  6. Sleep disturbance

Note: Specific criteria for children six years and younger are noted in parentheses and italics.

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be associated with forgetting and "bouncing back" from terrible events. We now know that even infants and toddlers display some of the symptoms of PTSD and that these may be appropriately conceptualized as PTSD (Keller & Feeny, 2014; Scheeringa, Zeanah, & Cohen, 2011). In DSM-5, there are no differences in the set of diagnostic criteria for children and adolescents (compared to adults). However, there is a subtype of PTSD for preschool children, with fewer symptoms in the set of diagnostic criteria and some developmentally informed adjustment in the descriptions of symptoms. It is important to recognize that children frequently display subclinical symptoms, particularly connected to more common and lower-magnitude stressors such as interpersonal loss. Many of the children who display subclinical symptoms have experienced multiple stressful events (Copeland, Keeler, Angold, & Costello, 2010).

PTSD is more likely to be diagnosed in children and adolescents if there are repeated, multiple, or prolonged experiences of trauma, more direct or severe exposure, and/or a perceived lack of protection (e.g., trauma perpetrated by caregiver or trusted adult, or trauma experienced when a child is separated from parents) (Masten & Narayan, 2012). PTSD is a disorder that unfolds over time. In the immediate wake of the trauma, all aspects of children's adjustment are likely to be affected (Masten & Narayan, 2012; Scheeringa et al., 2011).

During the acute stress period, emotions such as terror, helplessness, shame, and sadness are common; intense physiological responses and behaviors are additional complications (Keller & Feeny, 2014). Pynoos, Steinberg, and Piacentini (1999, p. 1544) describe a seven-year-old who reported, "My heart was beating so fast I thought it was going to break." Cognitive functioning is disrupted, with confusion, uncertainty, and misunderstanding. Younger children, for instance, are less likely to appreciate the uncontrollable nature of intrusive thoughts (Sprung & Harris, 2010). Appraisal and misappraisal of ongoing events and their likely causes and consequences are particularly important developmental constructs to consider (Keller & Feeny, 2014). For example, changing expectations of responsibility for personal safety, as well as individual differences in appraisal processes and stress responses, may exacerbate children's reactions to trauma.

Adjustment to the trauma, or lack of adjustment, is related to many child factors, including developmental status and neurobiological maturation, temperament and attachment, and anxiety sensitivity; outcomes are also influenced by external factors related to the nature of the trauma itself, parents and families, other life events, and schools and larger social communities (Furr, Comer, Edmunds, & Kendall, 2010; Masten & Narayan, 2012). The elements of trauma include the frequency, intensity, and duration of exposure, and the specific form of trauma (e.g., natural disaster versus parental abuse), with longer, more intense trauma and trauma involving human perpetrators associated with more severe and persistent PTSD. Trauma details and reminders are often upsetting; they may come from unexpected sources such as media reports (Masten & Narayan, 2012). Children's adjustments are sometimes embedded in the adjustments of others as they witness the distress and horror of loved ones and their continuing struggles to recover; indeed, there may be cascades of additional stressful experiences that continue to negatively affect children (Masten & Narayan, 2012; Pynoos et al., 1999; also see Figure 8:4).

PTSD has been documented in children and adolescents around the world following hurricanes in New Orleans, the Carolinas, and Hawaii; earthquakes in California, Athens, Taiwan, and Turkey; and tsunamis in Sri Lanka (Asarnow et al., 1999; Catani, Gewirtz, Schauer, Elbert, & Neuner, 2010; Giannopoulou, Strouthos, Smith, Dikaiakou, Galanopoulou, & Yule, 2006; Hamada, Kameoka, Yanagida, & Chemtob, 2003; Hsu, Chong, Yang, & Yen, 2002; Kronenberg et al., 2010; Sahin, Batigun, & Yilmaz, 2007). PTSD has also been described in children and adolescents exposed to war trauma in the Middle East, in Bosnia, and in Africa (Husain, Allwood, & Bell, 2008; Kithakye, Morris, Terranova, & Myers, 2010; Morgos, Worden, & Gupta, 2008; Solomon & Lavi, 2005; Thabet, Tawahina, El Sarraj, & Vostanis, 2008); in child refugees from Tibet and Latin America and in children adopted from Romania (Hoksbergen et al., 2003; Kinzie, Cheng, Tsai, & Riley, 2006; Servan-Schreiber, Lin, & Birmaher, 1998); and in children and adolescents who experienced the 9/11 attacks on the World Trade Center in New York City (Brown & Goodman, 2005; Mullett-Hume, Anshel, Guevara, & Cloitre, 2008).

A recent review of child development in the context of mass trauma experiences such as disaster, war, and terrorism provides much-needed perspective on the scope and impact of this awful global phenomena (Masten & Narayan, 2012). Across countries and investigations, several findings are clear. First, children's exposure to danger and disaster varies widely, depending on geography, socioeconomic status (SES), and political circumstances. Older children and adolescents experience more adversity than younger children, and there are

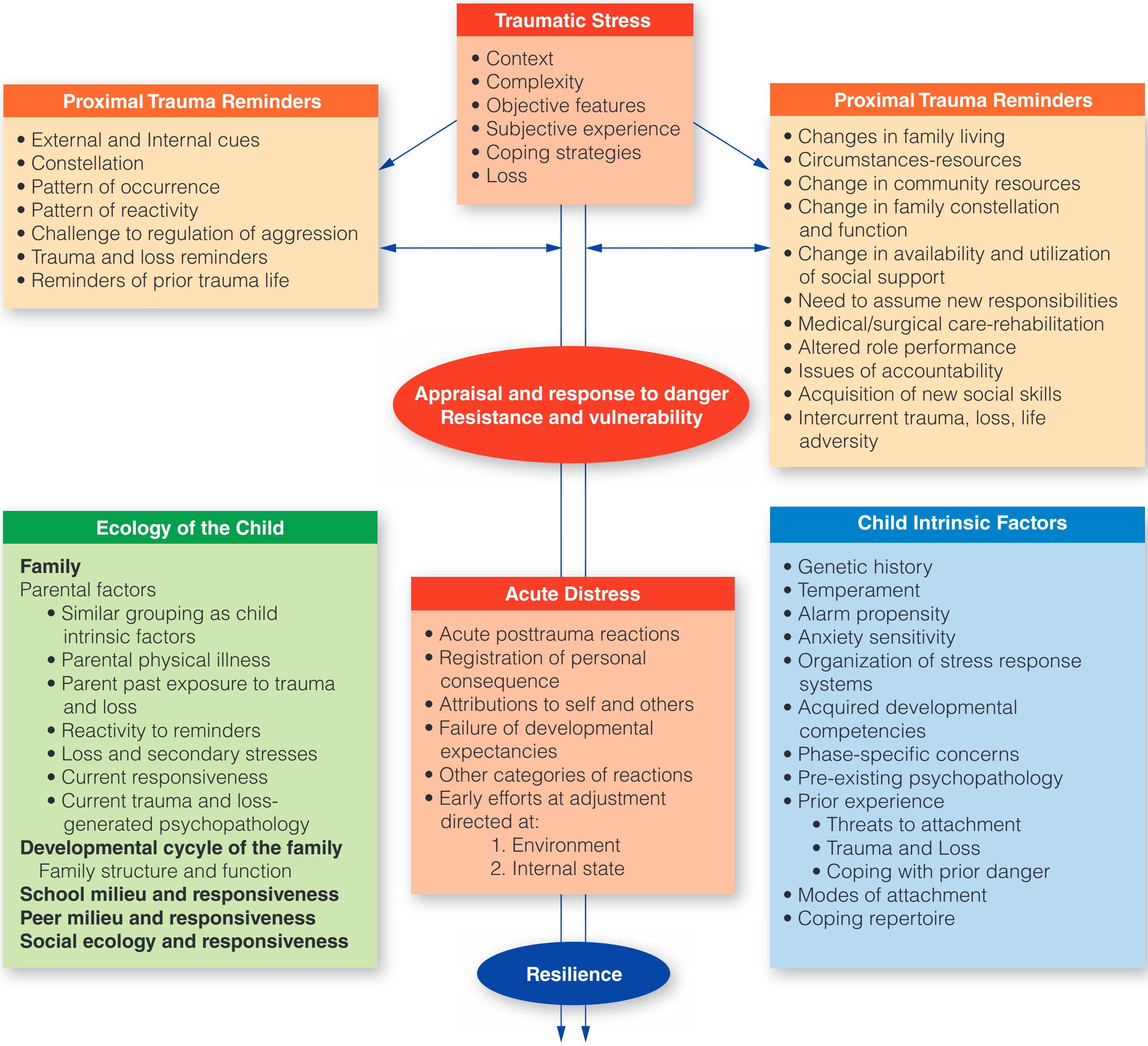
Traumatic Stress
• Context
• Complexity
• Objective features
• Subjective experience
• Coping strategies
• Loss
Proximal Trauma Reminders
• External and Internal cues
• Constellation
• Pattern of occurrence
• Pattern of reactivity
• Challenge to regulation of aggression
• Trauma and loss reminders
• Reminders of prior trauma life
Proximal Trauma Reminders
• Changes in family living
• Circumstances-resources
• Change in community resources
• Change in family constellation and function
• Change in availability and utilization of social support
• Need to assume new responsibilities
• Medical/surgical care-rehabilitation
• Altered role performance
• Issues of accountability
• Acquisition of new social skills
• Intercurrent trauma, loss, life adversity
Appraisal and response to danger
Resistance and vulnerability
Ecology of the Child
Family
Parental factors
• Similar grouping as child intrinsic factors
• Parental physical illness
• Parent past exposure to trauma and loss
• Reactivity to reminders
• Loss and secondary stresses
• Current responsiveness
• Current trauma and loss-generated psychopathology
Developmental cycle of the family
Family structure and function
School milieu and responsiveness
Peer milieu and responsiveness
Social ecology and responsiveness
Acute Distress
• Acute posttrauma reactions
• Registration of personal consequence
• Attributions to self and others
• Failure of developmental expectancies
• Other categories of reactions
• Early efforts at adjustment directed at:
1. Environment
2. Internal state
Child Intrinsic Factors
• Genetic history
• Temperament
• Alarm propensity
• Anxiety sensitivity
• Organization of stress response systems
• Acquired developmental competencies
• Phase-specific concerns
• Pre-existing psychopathology
• Prior experience
• Threats to attachment
• Trauma and Loss
• Coping with prior danger
• Modes of attachment
• Coping repertoire
Resilience

FIGURE 8:4 Developmental psychopathology model of PTSD.

Source: Reprinted from Pynoos, R. S., Steinberg, A. M., and Piacentini, J. C. (1999). A developmental psychopathology model of childhood traumatic stress and intersection with anxiety disorders. *Biological Psychiatry, 46,* 1524–1554; copyright 1999, with permission from Elsevier.

cumulative effects with multiple stressful and traumatic experiences. Increased risks are associated with separation from parents, proximity to threat, severity of threat, dislocation, greater exposure to death of family and friends, and rape (Furr, Comer, Edmunds, & Kendall, 2010; Masten & Narayan, 2012).

Understanding gender differences related to risk and disorder is complicated. Boys are more likely to experience traumatic events, but girls are more frequently diagnosed with PTSD. The effects of gender may be stronger for older youth (Furr et al., 2010; Keller & Feeny, 2014). The most salient protective factor is the availability of an attachment figure. Indeed, “the buffering effect of proximity to parents and other attachment figures for children in the midst of terrifying experiences is one of the most enduring findings in the literature on war and other life-threatening disasters” (Masten & Narayan, 2012, p. 229).

In addition to these types of natural disasters and manmade horrors, everyday tragedies can be associated with the emergence of PTSD. Serious car accidents, for example, are a common cause (Schafer, Barkmann, Riedesser, & Schulte-Markwort, 2006).

WILLIAM WEST/AFP/Getty Images

Children surviving severe trauma, such as natural disasters, are at increased risk to develop symptoms of PTSD.

Interpersonal trauma (such as maltreatment) is also clearly associated with high-risk status (Cicchetti, 2016). Maltreatment coupled with exposure to family violence is common (Gewirtz & Edleson, 2007). For children who experience repeated interpersonal trauma, it is important to keep in mind that events intended to provide safety are also often upsetting. Given the literature on the development of attachment in maladaptive relationships, and that "parents provide children's primary protection from real or perceived danger, and thus, children's and young adolescents' perceptions of danger and how to stay safe," it is not surprising that children who were placed in foster care following maltreatment reported that the most frightening event that they experienced was "placement in foster care" (Scheeringa, Weems, Cohen, Amaya-Jackson, & Guthrie, 2011, p. 776).

Recent studies of children and adolescents who experience multiple and complex interpersonal trauma (e.g., recurrent or chronic physical or sexual abuse) suggest that a new diagnostic category be included in upcoming editions of the DSM: **developmental trauma disorder**, a disorder involving both exposure and adaptation to chronic trauma, with exposure often occurring in the context of a child's caregiving environment (Morey, 2016; Spinazzola, Blaustein, & van der Kolk, 2005; van der Kolk, 2007; van der Kolk, Roth, Pelcovitz, Sunday, & Spinazzola, 2005; also see Box 8:1).

Exposure to traumatic events is not uncommon, with estimates ranging from one-fourth to two-thirds of children reporting some traumatic history by age 16 (Copeland, Keeler, Angold, & Costello, 2007; Fisher et al., 2015; Scheeringa et al., 2011). Although we usually think of trauma in terms of the direct and life-threatening experiences just described, indirect forms of exposure (such as living in dangerous environments or exposure to domestic or gun violence) are increasingly frequent (Margolin & Vickerman, 2011). Because increased risk is associated with additional exposure, the experience of both direct and indirect forms of trauma in ethnic minority children from disadvantaged backgrounds is especially troubling (Lieberman et al., 2011).

Developmental Course

Maltreatment

Short-Term Outcomes

As emphasized previously, maltreatment is not a disorder for which a single developmental course can be described. Instead, it is a risk factor whose impact may be experienced in multiple domains and in various pathways over time. In the physiological domain, a number of negative consequences of maltreatment have been identified. With respect to brain structures and development, multiple regions, neural circuits, and neurotransmitter systems are adversely affected, with impairments frequently observed across the frontal-limbic networks (Cicchetti, 2016; Shonkoff et al., 2012). The timing of maltreatment matters. "Children may be especially vulnerable to the effects of maltreatment or other pathological experiences during periods of rapid creation or modification of neuronal connections" (Cowell, Cicchetti, Rogosch, & Toth, 2015, p. 530). Maltreatment, as well as exposure to toxic or chronic stress, also negatively affect the developing HPA axis and hormone systems (Cicchetti, 2016; Pollak, 2015). As described earlier, epigenetic changes affecting gene function are also set in motion (Romens et al., 2015). These atypical physiological patterns may be associated with both short-term advantages and long-term disadvantages (Gunnar & Loman, 2011; Meaney, 2010). For example, one aspect of disrupted neurological function has to do with regions of the brain involved in emotion experience and regulation, including the processing of others' facial emotions. Abused children exhibit enhanced sensitivity to angry faces; their perceptions are fine-tuned to respond to the most salient aspects of their social environments (Pollak, 2015). Although these perceptions are exceedingly important to attend to, especially in environments with ongoing threats, this hypersensitivity often interferes with the development of effective and flexible self-regulation in later, less threatening contexts (Pollak, 2015).

In the psychological domain, abundant data document the maladaptive consequences of maltreatment.

BOX 8:1

Clinical Perspectives

Developmental Trauma Disorder

While DSM-5 serves as a consensus diagnostic guide across a broad range of disorders, it necessarily has limitations, especially with regard to the role of early experience and development in understanding psychopathology (Schmid et al., 2013). The Research Domain Criteria (RDoC) approach provides one alternative for considering the ways in which early maltreatment may affect neurodevelopment and genetic expression (Kaufman et al., 2015). A number of researchers and clinicians working with children exposed to ongoing trauma have proposed a specific diagnosis to better capture the unique characteristics and effects of complex trauma occurring in childhood. Although not included in DSM-5, the proposed diagnosis—developmental trauma disorder—may provide a way to more accurately describe, treat, and study both specific symptoms of this particular pattern of trauma (DeAngelis, 2007; Spinazzola et al., 2005). Developmental trauma disorder also allows for a more developmentally sensitive way to consider the effects of early maltreatment from an attachment theory perspective (Rahim, 2014).

The diagnosis of PTSD describes the pattern of pathological response that sometimes develops following acute trauma. Although the diagnosis of PTSD was developed primarily with adults in mind, DSM-5 does include PTSD in preschool children as a subtype of the PTSD diagnosis (Scheeringa et al., 2011). Typically, the term refers to a constellation of emotional, cognitive, physiological, and behavioral symptoms experienced following a traumatic episode. In contrast, the type of trauma to which children are often exposed is repetitive and chronic and occurs in the context of the very relationships that should provide a protective buffer to threats and stress (Spinazzola et al., 2005). Examples of this type of complex stress include physical and emotional abuse, witnessing domestic violence, and ongoing exposure to community violence. Although children who struggle in the face of such stressors are given a variety of diagnoses to account for their emotional and behavioral problems, proponents of the developmental trauma disorder diagnosis believe that these generally fail to adequately describe the core etiology and distinctive cluster of symptoms that these children experience (D'Andrea, Ford, Stolbach, Spinazzola, & van der Kolk, 2012).

In addition, there is increasing evidence that experiencing this kind of trauma during childhood leads not only to immediate clinical symptoms, but also to more pervasive and long-term neurobiological and psychological consequences resulting from specific structural and functional changes in brain development (Gabowitz, Zucker & Cook, 2008; Morey, 2016). Long-term difficulties associated with early trauma include problems with regulation of emotions and behavioral impulses, as well as problems with memory and attention, self-perception, and relationships.

The National Child Traumatic Stress Network (NCTSN) is a group of over 70 child mental health centers dedicated to the study and treatment of children experiencing complex trauma. This consortium is developing an extensive database based on the over 50,000 children per year who are seen at these centers, where they are studied and treated. The resulting research and clinical findings are generating a range of compelling findings that support the scientific basis for the developmental trauma disorder diagnosis (NCTSN, 2011).

Work on refining the diagnostic criteria for developmental trauma disorder continues. The following criteria have guided both clinical and research efforts in recent years (Stolbach et al., 2013; van der Kolk et al., 2005):

- *Exposure:* Exposure to one or more forms of developmentally adverse interpersonal traumas, such as abandonment, betrayal, physical or sexual abuse, and emotional abuse. May also experience subjective feelings in relation to this trauma, such as rage, betrayal, fear, resignation, defeat, and shame.
- *Dysregulation:* Dysregulated development in response to trauma cues, including disturbances in emotions, health, behavior, cognition, relationships, and self-attributions. Behavioral manifestations could involve self-injury; cognitive manifestations might appear as confusion or dissociation.
- *Negative attributions and expectations:* Negative beliefs in line with experience of interpersonal trauma. May stop expecting protection from others and believe that future victimization is inevitable.
- *Functional impairments:* Impairment in any or all arenas of life, including school, friendship, family relations, and the law.

Difficulties with negotiating typical developmental challenges (such as those involving attachment, autonomy, peer relationships, play, and learning) are also observed (Cicchetti, 2016). As noted in the example of the processing of facial emotions, emotional development is often negatively affected. With respect to overall emotional experience, maltreated children display difficulties with emotion processing and communication (i.e., recognition and expression of emotion) and emotion regulation (Cicchetti, 2016; Pollak, 2008, 2015).

With respect to cognitive processes, attention, memory, and problem solving are all affected (Pollak, 2015). Although basic memory processes in maltreated children appear generally similar to children who have not been maltreated, there is evidence of difficulty with recalling specific autobiographical memories. These difficulties may be related to the avoidance of negative emotion associated with painful memories (Howe, Cicchetti, & Toth, 2006; Valentino, Toth, & Cicchetti, 2009; Williams et al., 2007). Executive functioning (i.e., planning and behavior regulation) is also impaired; risky decision making and problematic risk behaviors are frequently observed. These are likely related to the atypical development of the prefrontal cortex (Pollak, 2015; Weller, Leve, Kim, Bhimji, & Fisher, 2015). Negativity bias, deficits in social information processing, and impaired problem solving have all been described (Cicchetti, 2016; Luke & Banerjee, 2013). Academic achievement is often compromised (Schelble, Franks, & Miller, 2010). Chronicity must also be considered, with longer histories of maltreatment associated with poorer cognitive outcomes (Cowell et al., 2015).

Deficits in the self-system (i.e., self-concepts, self-regulation, autonomy) are notable (Cicchetti, 2016). Some children and adolescents exhibit dissociation, including atypical experiences of perception, memory, and identity (Carlson, Yates, & Sroufe, 2009; Cicchetti, 2016; Silberg, 2014). These dissociative experiences are distinct from more typical dissociative states displayed by children (often involving imaginative play and more permeable boundaries between fantasy and reality). Dissociation following maltreatment is hypothesized to be related to multiple episodes of trauma and the avoidance of painful emotions and memories, and reflects the "collapse" of coping and regulation (Carlson, Yates, & Sroufe, 2009; Silberg, 2014).

In the relationship domain, negative effects are apparent in both family and peer systems. Maltreated children are much more likely to display insecure attachments, particularly disorganized attachments, than non-maltreated children (Cicchetti, 2016; Stronach et al., 2011). Indeed, "maltreating behaviors are arguably among the most frightening parental behaviors, placing children in an irresolvable paradox in which their attachment figures are simultaneously their source of safety and their source of fear" (Cicchetti, 2016, p. 197).

Peer difficulties have also been repeatedly observed. Maltreated children are at increased risk for both bullying and victimization (Cicchetti, 2016; Luke & Banerjee, 2013). Some findings suggest that physically abused boys are more likely to display physical aggression toward peers, whereas sexually abused girls are more likely to display relational aggression (Cullerton-Sen et al., 2008; Grant et al., 2014). **Poly-victimization**, the experience of high levels of many types of victimization, is a particularly distressing outcome (Finkelhor, Ormrod, Turner, & Holt, 2009). Children who endure poly-victimization "experience physical and emotional abuse by caregivers, assaults and harassment by peers, sexual victimizations by acquaintances and strangers, and are exposed to crime and violence in their communities and neighborhood—all this over the course of a relatively short period of time" (Finkelhor, Ormrod, Turner, & Holt, 2009, p. 316).

There are four pathways to becoming a poly-victim. *Living in a dangerous community* involves exposure to violence and crime, neighborhood chaos, and a lack of social ties and support, all of which contribute to an individual's vulnerability in multiple contexts. *Living in a dangerous family* involves intrafamily maltreatment that leads to emotional dysregulation and problematic peer interactions, which in turn lead to an individual being the target of bullies. *Having a chaotic, multiproblem family environment* may include parental illness, unemployment, psychiatric disorders, and poor supervision and neglect, all of which are associated with vulnerability in both family and peer contexts. *Having emotional problems that increase risky behaviors and compromise adaptation* is a pathway possibly related to temperament; characteristics perceived as annoying, frustrating, disruptive, or overly passive lead to heightened risk for maltreatment in family and peer contexts. This last pathway is associated with earlier onset of poly-victimization. Two periods are linked with spikes in onset: entry into elementary school and entry into high school.

Long-Term Outcomes

There is a continuum of outcomes related to personality, psychopathology, and physical health. Individuals with histories of maltreatment are at higher risk for anxiety disorders, mood disorders, conduct disorders, substance abuse disorders, personality disorders, and various poor health outcomes (Cicchetti, 2016; McCrory & Viding, 2015; Pollak, 2015; Shonkoff et al., 2012). Much of the research and clinical attention has focused on the trajectory from maltreatment to mood disorders (see Box 8:2).

BOX 8:2

EMERGING SCIENCE

Maltreatment and Mood Disorders

As researchers in the field of childhood psychopathology come to take a developmental perspective, they are increasingly interested in the links between early risk and protective factors and later disorders. One of the most consistently demonstrated findings from these efforts is the relation between maltreatment in childhood and the development of depressive disorders (Cicchetti, 2016) and, more recently, the specific role of compromised emotion regulation in the development of mood and other disorders (Shenk et al., 2015). Child maltreatment, including all forms of abuse and neglect, compromises development in many domains. For example, we have previously discussed the importance of the early attachment relationship that develops between the infant and the primary caregiver in the first year of life. If that relationship is characterized by either consistent abuse or an unpredictable pattern that includes abuse, important aspects of children's expectations of themselves, of others, and of their ability to effectively manage their environment may be disrupted or disturbed. The significant relations among abuse, attachment, and depression are especially strong for emotional abuse (Lieberman et al., 2011; van Harmelen, de Jong, Spinhoven, Penninx, & Elzinga, 2010).

There is much emphasis in developmental psychopathology on the integration of different levels of analysis. A number of researchers have asserted the need to specify how the effects of early adverse experiences may cascade across levels and lead to the development of psychopathology. For example, in addition to considering how the relation between abuse and depression is mediated by the attachment relationship, recent research has focused on how genes, the brain, the family, and the larger social context all provide links between early maltreatment and later depression (Cicchetti & Toth, 2015).

Specific pathways being studied include the effects of abuse on critical neuroendocrine systems (Hanson et al., 2015), as well as structural changes in developing brain regions linked to behavioral and emotional functioning (Teicher et al., 2015). For some time now, we have understood that stressful life events can affect certain neurocircuits and that these changes in neurocircuitry can be reliably measured. Further, extensive evidence links specific neurological and endocrine pathways to the development of depressive and anxiety disorders (Gunnar & Loman, 2011; Heim et al., 2000). Past research has demonstrated that the neurobiological alterations resulting from early abuse may, in many cases, be permanent and significantly increase the risk for depression in childhood, adolescence, and adulthood (Gunnar & Quevedo, 2007). Specifically, stress early in development is associated with poor regulation of the HPA axis. This complex neuroendocrine system helps the body to mobilize in the presence of stress and helps reestablish equilibrium after the threat has passed. Prolonged or repeated and unpredictable stress, as is the case with many instances of child maltreatment, may lead to later emotional and behavioral problems. The pathway from maltreatment to disorder may be especially relevant for those at genetic risk for disorders like depression.

It is important to note that not all children who are maltreated develop depression; and by no means does a diagnosis of depression necessarily imply a history of abuse. However, by better understanding the relationship between maltreatment and depression, more targeted and effective approaches to prevention and treatment can be designed to help many children, adolescents, and adults. Also, the models developed to understand the pathways across physiological, psychological, and social levels that may lead from maltreatment to depression will inform other investigations of developmental psychopathology and a wide range of important health outcomes (Pollak, 2015).

Children from minority backgrounds appear to be at higher risk for negative outcomes (Cicchetti, 2013, 2016). We must also consider subclinical difficulties (where the child or adolescent doesn't meet the full set of diagnostic criteria) that adversely affect individuals' well-being.

The results of a longitudinal investigation of the impact of sexual abuse on the development of girls provide compelling data on outcome variability (Trickett, Noll, & Putnam, 2011). Three patterns of abuse and outcome were observed. The first pattern involved sexual abuse by the biological father, early onset, and longer duration. The second pattern involved abuse by the stepfather/mother's boyfriend or other relative, later onset, shorter duration, and less frequent violence. The third involved abuse by multiple perpetrators, short duration, and severe violence. The first pattern of abuse, involving the biological father, was associated with the poorest outcomes. Across all the patterns of abuse, poor outcomes included atypical physical development (e.g., early puberty, more obesity); more psychological and psychiatric symptoms (dysregulated stress–response system, atypical cognitive

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development and academic underachievement, atypical sexual attitudes and beliefs, and risky sexual behaviors); ongoing victimization and sexual violence; and later, domestic violence. Intergenerational consequences (such as less frequent secure attachment relationships with their own children) were also noted.

Resilience

Not all maltreated children display maladaptive outcomes. Many maltreated children exhibit resilience. Resilience is a dynamic construct that encompasses many levels of adaptation, including physiological, psychological, and social levels (Cicchetti, 2010; Masten, 2011). In addition, each child's resilience is embedded in larger systems (e.g., families, communities, and cultures) that are themselves more or less adaptive. When conceptualized in this way, resilience, as noted many times previously, is not an all-or-nothing phenomenon.

A number of protective factors that promote resilience or recovery following maltreatment have been identified, including genetic predispositions (Bradley et al., 2011; Gunnar & Quevedo, 2007); child characteristics such as average or above-average intelligence, positive emotionality and optimism, and perceived self-efficacy and better self-regulation; and relationship characteristics such as secure attachment and friendships (Cicchetti, 2013, 2016; Grant et al., 2014; Masten & Narayan, 2012). In one study of the well-being of adults who had experienced child sexual abuse, greater life satisfaction was reported by women, better-educated adults, employed adults, and adults who were in positive relationships (Whitelock, Lamb, & Rentfrow, 2013). As we consider the range of potential outcomes for maltreated children, keep in mind the earlier example of maltreated children who are very attentive to the expression of anger, and think about the ways in which young children's attempts to adapt to abusive or neglectful environments may lead to maladaptation over time. One example of the connection between earlier adaptation and later maladaptation might be that "a rigidly applied avoidant coping response protects a child growing up amid violence and victimization, but can also lead to clinical levels of anxiety or depression" (Wadsworth, 2015, p. 97). These connections between children's responses to maltreatment as it happens and their later difficulties are especially important to consider in the context of chronic and uncontrollable stressors. "Children who experience chronic stress (e.g., family conflict, economic hardship, exposure to violence and victimization) tend to rely on cognitive and behavioral avoidance"; these forms of coping may be the best available options in the short run, but they may compromise long-term health and well-being (Wadsworth, 2015, p. 98).

The Case of Deion

Deion is currently enjoying a productive, busy, and fun college career at a large state university. He is consistently on the dean's list, he helped establish a tutoring program with inner-city youth in several nearby elementary schools, and, along with a number of his good friends, he is an enthusiastic participant in several intramural sports. Deion's life, however, was not always so positive and hopeful.

In August 2005, Deion had just begun his final year of junior high in New Orleans, where he lived with his mother, older brother, and younger sister, when Hurricane Katrina struck. With water rising quickly, streets closed, and no way to get to safety, Deion's family found themselves trapped in their home with little drinking water or food. Eventually rescued by resourceful neighbors who gained access to a small boat, Deion and his family made it to the New Orleans Superdome, where tens of thousands of others found shelter. Over the next several days, however, conditions steadily deteriorated, along with the health of Deion and his siblings. Deion's mother managed to keep the family together, garnered resources where she could, and created a sense of safety and hopefulness for her children. Unable to return to their destroyed home, Deion's mother reached out to family and church contacts. In time, she got her family out of the city and into a small home outside Houston, where she had supportive relatives and found a welcoming church.

Initially, Deion struggled in the aftermath of his family's traumatic and abrupt dislocation. He felt lonely and angry. He had difficulty making the transition to his new school and missed the friends he had grown up with. Although generally understanding and patient with Deion, his mother noticed that his grades had begun to slip and that he was spending an increasing amount of time alone in his room. She insisted that he work to his potential in the classroom and encouraged him to join at least one co-curricular activity each semester of that school year.

Resentful and resistant at first, Deion soon found himself making new friends and receiving positive feedback from teachers and coaches. The following year, he started high school with a small but close circle of friends and with newly developed interests in debate and track. Deion proved to be an excellent student and was passionate in his commitment to debate and track. In his college applications, Deion wrote movingly about his experiences during and

> after the Hurricane Katrina tragedy. He was open and clear about the ongoing sense of loss he felt and about the generosity of those who helped his family start a new life in a new community. Finally, he wrote about the personal strengths that he discovered in himself, as well as his confidence in the future as he prepared to leave home and begin college. With excellent grades, varied accomplishments, strong recommendations, and a memorable essay, Deion was an attractive applicant and eagerly pursued by several highly regarded colleges and universities. Taking advantage of generous scholarship support, he enrolled in a university a few hours from his home, where he is currently thriving. ■

Trauma- and Stressor-Related Disorders

Short-Term Outcomes

The developmental course of PTSD varies. For some, symptoms improve over time; for others, symptoms go from bad to worse. Many children and adolescents display a “mixed picture of resilience and lingering vulnerability and harm” (Masten & Narayan, 2012, p. 229). Several distinct PTSD pathways have been described, including a *resilient (i.e., stress-resistant) pathway,* a *response and recovery pathway,* a *delayed breakdown pathway,* and a *chronic dysfunction (i.e., breakdown without recovery) pathway* (Bonanno, 2004; Bonanno & Mancini, 2008; Masten & Obradović, 2008; see Figure 8:5). One of the most consistent outcome-related findings is that the parent’s own response to trauma and his or her ability to function are linked to the child’s symptom severity and outcome (Keller & Feeny, 2014; Masten & Narayan, 2012).

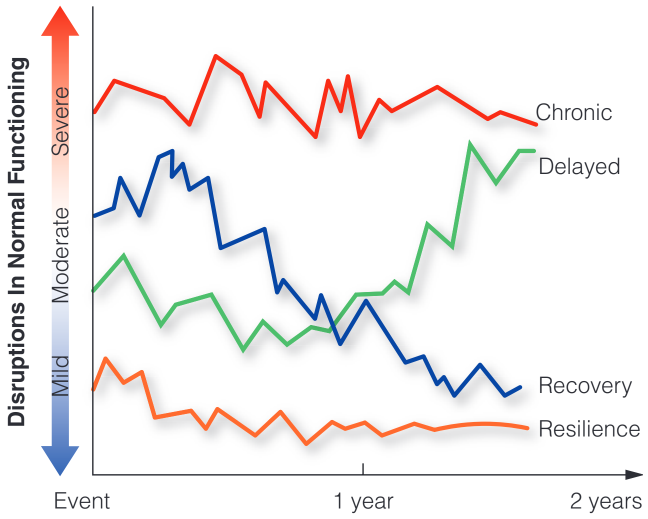

FIGURE 8:5 Developmental pathways for children with PTSD.

Source: From Bonanno, G. A. (2004). Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist, 59*(1), 20–28; copyright © 2004 American Psychological Association.

For those children and adolescents who struggle, the effects of stress and trauma are noted across multiple levels and in multiple domains. PTSD is linked to physiological changes involving both structure and function, with impairments similar to those observed in children who have been maltreated (Keller & Feeny, 2014; Marusak, Martin, Etkin, & Thomason, 2015). Damage to the hippocampus, as well as atypical frontal lobe anatomy and volume, have been documented (Carrion et al., 2009; Carrion, Weems, & Reiss, 2007). In fact, as summarized in the first section of this chapter, the “effects of experience can become biologically embedded in a developing organism,” and “bad timing . . . can disrupt development, with long-lasting implications for adaptive capacity, health, and vulnerability to later trauma experiences” (Masten & Narayan, 2012, p. 241).

Psychological maladaptation is also observed across domains of cognitive, emotional, and behavior functioning. Again similar to children who have been maltreated, children who experience traumatic stress display memory and problem-solving difficulties, emotion dysregulation, and many types of behavior problems. Sleep disturbances are common (Brown, Mellman, Alfano, & Weems, 2011). Addressing sleep problems such as nightmares may improve PTSD outcomes (Gregory & Sadeh, 2015). PTSD may also disrupt a child’s management of age-related tasks and challenges (Briggs-Gowan et al., 2010). Children who experience family violence in early childhood, for instance, display disrupted and atypical development related to attachment, self-regulation, and social and peer competence (Gewirtz & Edleson, 2007). To the extent that trauma is related to disaster or war, and homes, neighborhoods, schools, and economies are damaged or destroyed, a range of other childhood experiences are also likely to be affected (Masten & Narayan, 2012; Moore & Varela, 2010).

Long-Term Outcomes

Although several protective factors appear to balance the risk for poor outcomes, PTSD is associated with the later emergence of both internalizing and externalizing disorders. Noninterpersonal trauma appears to be linked more often with anxiety disorders (Briggs-Gowan et al., 2010; Lieberman et al., 2011; Mrug & Windle, 2010). Chronic exposure to stress and trauma is associated

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with worse outcomes, and gene-by-environment effects are implicated in worse outcomes for girls and young women (Gewirtz & Edleson, 2007; Hammen, Brennan, Keenan-Miller, Hazel, & Najman, 2010). Children who live in multirisk environments are likely to display cascading effects of trauma, involving both atypical resolutions of developmental challenges and internalizing or externalizing disorders (Gewirtz & Edleson, 2007; Grant et al., 2014; Masten & Narayan, 2012). In addition to a range of mental health outcomes, physical health may be adversely affected across the lifespan (Moffitt, 2013). The construct of allostatic load may be especially useful in thinking about mental and physical health trajectories (Danese & McEwen, 2012; Juster et al., 2011; Rogosch, Dackis, & Cicchetti, 2011).

One issue that remains unresolved is whether exposure to stress and adversity involves *inoculation* versus *sensitization* effects (Masten & Narayan, 2012). With inoculation effects, early exposure to stress allows children and adolescents to develop and practice a variety of coping responses and may provide one kind of protective effect. With sensitization effects, early exposure leads to physiological and psychological changes that likely increase risk. Research suggests that moderate stress (*not* the kind experienced in PTSD) may have beneficial effects, whereas "exposure to overwhelming or capacity-depleting levels of adversity" is more likely to lead to increased vulnerability (Masten & Narayan, 2012, p. 242). To take advantage of any stress-related benefits, "interventions designed to build capacity for resilience would need to scaffold or in other ways ensure an adaptive response in order to avoid risk of breakdown or depletion of resilience capacity" (p. 242).

Resilience

Many researchers and clinicians have suggested that resilience in the face of trauma is more common than we might think (Bonanno, 2004; Masten, 2014; see again Figure 8:5). Bonanno differentiates resilience (i.e., the maintenance of pretrauma trajectories) from recovery (i.e., a trajectory characterized by maladaptation following trauma, followed by gradual improvement). Factors such as chronic versus acute stressors influence the timing and scope of resilience, and may contribute to a mix of resilience and ongoing struggles (Bonnano & Diminich, 2013). Factors that are associated with resilience and recovery include child characteristics, family and relationship characteristics, and sociocultural characteristics. Child factors include intelligence and positive personality characteristics. Relationship factors include the availability and quality of attachment figures and positive peers (Jain, Buka, Subramanian, & Molnar, 2012; Masten & Narayan, 2012). As with the findings related to maltreatment, parenting is a key source of support for children, even when the trauma involves domestic violence in which the parent is the victim (Gewirtz, DeGarmo, & Medhanie, 2011).

Peer support is also important. Children who were able to receive support from classmates following Hurricane Katrina displayed better outcomes; these better outcomes were likely related, in part, to the effects of shared experiences (Moore & Varela, 2010). Community support also has been described as helpful. Former child soldiers who were exposed to harrowing trauma displayed better outcomes in the presence of community acceptance and social reintegration; opportunities for schooling were particularly important (Betancourt et al., 2010; Betancourt, McBain, Newnham, & Brennan, 2014; Masten & Narayan, 2012). Sociocultural belief systems and traditions (such as religious faith or rituals) may be an especially meaningful factor for positive outcomes (Masten, 2014).

In addition to resilience and recovery, posttraumatic growth is possible. **Posttraumatic growth** involves positive changes following trauma. These changes include identification of personal strengths, appreciation for life, enhanced spirituality, better relationships with others, and new possibilities for change and growth (Keller & Feeny, 2014; Kilmer, Gil-Rivas, Griese, Hardy, & Hafstad, 2014). Posttraumatic growth "only occurs if trauma has been upsetting enough to drive the survivor to (positive) meaning-making of the negative event" (Levine, Laufer, Stein, Hamama-Raz, & Solomon, 2009, p. 285). Like resilience, posttraumatic growth may be experienced along with periodic or ongoing distress and dysfunction (Kilmer et al., 2014).

Etiology

Maltreatment

Single-factor explanations of maltreatment (e.g., related to parent psychopathology, parent's own history of abuse, or poverty) have given way to more complex models, such as the ecological–transactional model of child maltreatment (Cicchetti, 2016). In that model, for example, multiple factors contribute to high-risk outcomes. A number of parent factors increase the likelihood of maltreatment. Many studies identify parents' own histories of maltreatment as an important risk factor, although rates of subsequent maltreatment vary widely (Berlin, Appleyard, & Dodge, 2011). Additional parent factors include younger parents, a history of psychiatric disorders, and parenting beliefs and attitudes, such as those related to discipline (Lansford et al., 2015). The youngest and poorest caregivers display the most negative parenting strategies. Parents with intellectual disabilities are also more likely to neglect their children (Azar, Stevenson, & Johnson, 2012).

As described earlier in this chapter, maltreatment is especially problematic in early childhood. Increased risk may be due, in part, to the types of parenting stressors experienced by caregivers. For instance, Kopp (2009) notes that toddlers most annoy their mothers when they persistently whine, act aggressively, and fail to listen, whereas preschoolers are most upsetting when they argue or talk back. "For some parents, positive interludes are sufficiently satisfying to encourage their own coping, whereas for others, the combination of rapid developmental change, child negatives, and unpredictability promotes harsh, withdrawn, or imprudent childrearing" (Kopp, 2009, p. 37). In a recent study across 17 low- and middle-income countries, children with intellectual, language, sensory, and motor disabilities were more likely to experience physical punishment, physical aggression, and severe physical violence than children without disabilities (Hendricks, Lansford, Deater-Deckard, & Bornstein, 2014). Providing treatment to children, educating parents about caregiving in stressful circumstances, and implementing broader social policies to address the high-risk status of these children are vital concerns are require coordinated action (Hendricks et al., 2014). Children's internalizing and externalizing behaviors also increase the likelihood of abuse, neglect, or both (Lansford et al., 2015).

Family factors such as angry, conflictual, and violent relationships between adults, chaotic and unstable home lives, and social isolation also increase the risk of maltreatment. Sociocultural factors, including poverty and communities and cultures that accept corporal punishment and violence as typical, also contribute to higher rates of maltreatment (Lansford et al., 2015). The evidence for the intergenerational transmission of maltreatment is mixed, with multiple factors influencing whether children who experience abuse go on to abuse or neglect their own children (Leve, Khurana, & Reich, 2015).

Trauma- and Stressor-Related Disorders

Explaining the emergence of trauma- and stressor-related disorders begins with exposure to traumatic experiences. We need to understand children's distress and dysfunction in the context of particular traumatic events. Then, we need to account for the specific factors that, in combination with trauma, lead to disorder.

Genes and Heredity

Pretrauma factors, such as individual differences in genes that are involved in the experience and regulation of stress, are likely to interact with environmental factors to increase risk for some children exposed to acute or chronic trauma (Gunnar & Quevedo, 2007). Several of these gene-by-environment effects have been described. For example, children and adolescents with certain alleles are at higher risk for poor outcomes following maltreatment compared to those without these alleles (Bradley et al., 2011; Uher et al., 2011). Another example of gene-by-environment impact involves the "biology of misfortune," in which stress reactivity combined with chronic stressors such as low SES and impoverished circumstances lead to uneven distributions of mental and physical illness and disorder (Boyce, 2016).

Physiological Factors

Neurodevelopmental models of early abuse and posttraumatic stress provide details about changes in brain systems associated with threat perception and threat response. In these models, physiological dysfunction is conceptualized first as an underlying vulnerability (i.e., present in some children before the experience of trauma) and second as a consequence of noxious experiences that disrupt normal functioning (i.e., resulting in additional, perhaps permanent, dysfunction) (Gunnar & Loman, 2011; Kalin, Shelton, & Davidson, 2007). Indeed, newborns whose mothers experienced trauma during pregnancy (i.e., chronic and war-related stressors) displayed changes in gene function connected to regulation of the HPA axis (Kertes et al., 2016). Further, the "chronic destabilization of neuronal networks in the hippocampus or cerebral cortex, combined with enhanced fear circuits in the amygdala" may lead to the development of disorders such as PTSD (Flinn, 2006, p. 151). The trajectories underlying various disorders may depend on the timing of brain development and stress. "Exposure to adversity at the time of hippocampal development could lead to hippocampus-dependent emotional disorders, which would be different from disorders arising from exposure to adversity at times of frontal cortex development" (Lupien, McEwen, Gunnar, & Heim, 2009, p. 441).

Child Factors

There are mixed data related to child age, with some studies suggesting that younger children are more vulnerable to PTSD and others suggesting that older children are at increased risk. These findings are likely related to a combination of factors, including cognitive and emotional development, adult and peer support, and type of stressor (Keller & Feeny, 2014). Gender plays a role, but a complex one, with girls exhibiting more internalizing symptoms and boys more externalizing symptoms (Keller & Feeny, 2014). Children with difficult temperaments experience greater risk. Because temperamental characteristics are genetically influenced and associated with the reactivity and regulation of emotionality and stress, this increased risk is not surprising (Gunnar & Quevedo, 2007; Keller & Feeny, 2014). In addition, trait anxiety and anxiety sensitivity are each associated with the increased frequency of the somatic symptoms of PTSD (Hensley & Varela, 2008). Protective roles for child and adolescent coping, intelligence, and positive personality characteristics that reduce risk in the presence of atypical stressful experiences have already been described in the previous section on the developmental course of PTSD.

Parent Factors

Parents can influence the development of PTSD, for example, via the *shotgun effect*, the *lack of protective shield effect*, and/or a *toxic family effect* (Scheeringa & Gaensbauer, 2000, p. 375; Ostrowski, Christopher, & Delahanty, 2007). The *shotgun effect* involves trauma that is so overwhelming that it produces anxiety symptoms in all family members. In other words, parents as well as children struggle to deal with the aftermaths of awful experiences such as the loss of a home in a fire or flood. The *lack of protective shield effect* involves parents who, for varied reasons, cannot provide the comfort, support, and security necessary for recovery. In these cases, parents may not recognize or they may minimize the impact of a particular trauma on children, believing that children are less affected by stress or that ignoring distress and dysfunction will help a child move on. And the *toxic family effect* has to do with the ways in which parent responses to trauma actually elicit and maintain anxiety symptoms in their children. In some cases, for instance, parents may exacerbate their children's distress by having their children repeatedly recall the traumatic experience or consider the possibility of new or repeat trauma.

Parents also contribute to children's risk or resilience via socialization of coping. Abaied and Rudolph (2010) describe two models that predict varied outcomes. The first, the *amplification-effects model*, suggests that there are "stronger risk effects for maladaptive coping suggestions and stronger protective effects for adaptive coping suggestions." The second, the *differential effects model*, suggests that "socialization of coping has different, but equally significant, effects of risk for psychopathology in the context of high versus mild stress" (Abaied & Rudolph, 2010, pp. 2–3). Abaied and Rudolph also note that girls and boys may respond to socialization of coping differently. Girls are often more socially competent than boys and may be better prepared to implement coping suggestions that require social skills. These varied parental responses to stressful experiences are embedded, of course, in overall family environments that are generally adverse or supportive (Grant et al., 2014; Keller & Feeny, 2014).

Environmental Factors

The type of trauma that is experienced is important. Whether the experience involves an objective or perceived threat, interpersonal or noninterpersonal trauma, or single versus multiple or cascading traumatic events (e.g., toxic stress) influences the development of disorder (Grant et al., 2014; Keller & Feeny, 2014; Shonkoff et al., 2012). Availability and access (or lack of availability or access) to a range of resources and support may influence the development of trauma- and stressor-related disorders. Following natural or human-made disasters, or in war-torn regions, economic factors (e.g., continued employment, and costs for food, housing, and other essentials), political factors (e.g., discrimination, marginalization), and community-based factors (e.g., schools and religious institutions) come into play and may exacerbate or improve children's and adolescents' initial functioning (Keller & Feeny, 2014; Masten & Narayan, 2012).

Assessment and Diagnosis

Special clinical skills are very important when assessing children who have been traumatized. Depending on the type of trauma, various accommodations related to developmental and physical status, or legal requirements, may be necessary (Keller & Feeny, 2014; Scheeringa et al., 2011). Assessment and diagnosis in very young children is especially challenging (Lieberman et al., 2011). Sociocultural factors (such as family and cultural norms, values, and available supports) must be appropriately addressed (Fontes & O'Neill-Aran, 2008). In most cases, it will be useful to expand assessments beyond a focus on the symptoms of disorder to include coping resources and social supports; at times, crisis intervention will need to take place immediately (Bal et al., 2009; Keller & Feeny, 2014).

The American Academy of Child and Adolescent Psychiatry (AACAP) (2010) recommends routine screening for PTSD during all initial mental health assessments. Parents should be included in evaluation whenever possible. Questions related to exposure to traumatic events and children's responses should be specific. For instance, AACAP suggests that asking "When you went past the house where the event occurred, did you get upset?" is more likely to elicit useful information than open-ended, more general questions. A number of stressor checklists and interview protocols are widely used (Grant et al., 2014).

Assessments related to maltreatment are often multidisciplinary, involving mental health professionals, physicians, and individuals from police and law agencies. These assessments are often initiated by social service agencies such as child protection units. Knowledge of best practices and ethical issues related to privacy and informed consent is essential (Jent et al., 2009; Manley & Chavez, 2008). Age- and gender-sensitive techniques, as well as the use of multiple informants for sexually abused children and for children who have witnessed family violence, are recommended (Hambrick, Tunno, Gabrielli, Jackson, & Belz, 2014).

Few children and adolescents report maltreatment. Patterns of disclosure in youth range from no disclosure at all, to seeking help from peers, to seeking help from adults (neighbors, teachers, school counselors, police officers), to displaying internalizing or externalizing behaviors (Ungar, Barter, McConnell, Tutty, & Fairholm, 2009). Reticence to disclose may be related to anxiety about disclosure, loss of control following disclosure, unpredictability of events following disclosure, negative personal consequences (e.g., physical harm), or worries about jail or legal consequences for the perpetrator (Malloy, Brubacher, & Lamb, 2011; Ungar, Tutty, McConnell, Barter, & Fairholm, 2009). A close victim–perpetrator relationship is associated with delayed disclosures (Foynes, Freyd, & DePrince, 2009). Asking children or adolescents about emotional or psychological abuse is less frequent, but critically important (Vachon, Krueger, Rogosch, & Cicchetti, 2015). Children and adolescents who have suffered because of natural disasters such as earthquakes and hurricanes or because of terror attacks, or who live in war zones amid widespread violence, also benefit from knowledgeable and compassionate assessments (Masten & Narayan, 2012).

Issues related to differential diagnosis and comorbidity are likely to involve decisions about anxiety disorders, mood disorders, ADHD, or externalizing disorders, and whether clinical presentations are consistent with single or multiple diagnoses (AACAP, 2010; Margolin & Vickerman, 2011). Because of the frequent display of somatic symptoms in children and adolescents who experience trauma, physical examinations are always important (AACAP, 2010).

Intervention

Treatment

"In an ideal world, treatment would be readily available and strongly encouraged at the time of disclosure" (Trickett, Noll, & Putnam, 2011, p. 469). Treatments for children who have experienced maltreatment must address multiple levels of distress and dysfunction. The Attachment and Biobehavioral Catch-up (ABC) program, described in Chapter 5, is a brief, manualized intervention that targets three key behaviors: providing nurturant care when children are distressed; following children's leads when they are not upset; and not exhibiting frightening behavior (Dozier & Roben, 2015). Although focused on promoting secure attachments, the ABC intervention is also effective in enhancing children's biological regulation (Bernard, Dozier, Bick, & Gordon, 2015). For children who experience out-of-home placements or placement changes following maltreatment, caregiver-based interventions mitigate HPA axis dysregulation (Fisher, Van Ryzin, & Gunnar, 2011). Interventions that directly support children's coping efforts may also be especially important "for repairing and recalibrating physiological stress systems (e.g., the HPA) that have adapted to chronic stress" (Wadsworth, 2015, p. 98).

For young maltreated children, the goals of child–parent interventions include amelioration of symptoms and support for ongoing development. Beneficial effects related to secure attachment, the development of positive self-systems, and improved parenting have all been described (Cicchetti, 2011, 2016). Child–parent psychotherapy (CPP) is "an exemplar of a contemporary evidence-based, relational treatment designed to intervene in and prevent child maltreatment via home visitation" (Toth, Gravener-Davis, Guild, & Cicchetti, 2013, p. 1604). Originally influenced by psychoanalytic models that emphasized the ways that parents who failed to understand how their own histories of abuse and neglect carried forward negative parenting attitudes and practices that compromised their relationships and hurt their children (Fraiberg, Adelson, & Shapiro, 1980), current CPP interventions incorporate a variety of cognitive and behavioral techniques that are associated with positive outcomes (Toth et al., 2013).

Comprehensive, multilevel interventions that comprise both child-focused and family-centered treatments are also recommended (Saveanu & Nemeroff, 2012). These interventions include risk-focused strategies, which reduce or prevent further risk; protection-focused strategies, which add resources to counterbalance risk; and process-focused strategies, which promote the development of well-being in domains of self-regulation and relationships (Gewirtz & Edleson, 2007). For better outcomes, implementation of these varied interventions takes racial and ethnic differences into account (Cicchetti, 2016). For children and adolescents dealing with multiple kinds of maltreatment and victimization, timely identification and treatment is necessary before any additional traumas are experienced (Finkelhor, Ormrod, Turner, & Holt, 2009).

With respect to the treatment of PTSD, there is clear need for both acute, crisis-oriented interventions and ongoing support (Layne et al., 2011; Masten & Narayan, 2012). Crisis management often includes immediate support for the child and all resources necessary to ensure health and well-being. The central components of PTSD treatment involve reestablishing a sense of safety for the child, processing and eventually reducing the intensity of emotional experiences, helping the child to understand the impact of the traumatic event, addressing secondary stresses, and providing support and guidance to the child's caregivers (La Greca & Silverman, 2009). For experiences related to mass trauma, five principles are at the core of intervention efforts: promote a sense of safety, promote calming, promote a sense of self-efficacy and collective efficacy, promote connectedness, and promote hope (Hobfoll et al., 2007). Treatments that take into account sociocultural resources, community values, and important rituals and traditions are likely to achieve better outcomes (Masten, 2014; Watters, 2010).

Cognitive and cognitive-behavioral approaches for PTSD have received the most empirical support (Keller & Feeny, 2014; Scheeringa, Weems, et al., 2011; Taylor & Weems, 2011). Trauma-focused cognitive behavior therapy (TF-CBT) is a multicomponent model that includes parent treatment, psychoeducation, relaxation and stress management skills, cognitive coping skills, emotion regulation skills, trauma narrative and cognitive processing of the traumatic experience, in vivo desensitization to trauma reminders, joint parent–child sessions, and enhancement of safety and future development (Cohen, Mannarino, Kliethermes, & Murray, 2012; Moffitt, 2013). It is difficult to acknowledge that many children experiencing chronic, uncontrollable stress "cannot be magically transported to safe and nurturing environments"; working to build and strengthen their coping skills in harsh settings is imperative (Wadsworth, 2015, p. 99). The National Child Traumatic Stress Network (NCTSN, http://www.nctsn.org/) is an organization focused on raising awareness and improving access to care for children and adolescents who experience trauma. NCTSN identifies a number of evidence-based treatments, supports efforts to disseminate those treatments, and provides training for mental health professionals and nonprofessionals.

Individual, group, and family formats all appear to be successful; group treatment may be especially useful in situations in which social and economic resources are limited (Giannopoulou, Dikaiakou, & Yule, 2006; Silverman, Pina, & Viswesvaran, 2008). Along with psychotherapy, many children and adolescents take medications, but there is limited evidence that medications provide significant added benefits (Keller & Feeny, 2014). For PTSD that follows maltreatment, there are a number of comprehensive, structured interventions that are efficacious (Cohen, Mannarino, Perel, & Stratton, 2007; Osofsky, 2003); these interventions target the many domains of development that have been adversely affected by ongoing trauma (Deblinger, Mannarino, Cohen, & Steer, 2006; Kinniburge, Blaustein, Spinazzola, & van der Kolk, 2005; Spinazzola et al., 2005; Vickerman & Margolin, 2007).

Prevention

Prevention of maltreatment is a high-priority effort. Increasing public awareness of maltreatment, providing support for at-risk children and families, and ensuring widespread availability and access are essential components of maltreatment prevention initiatives (Cicchetti, 2016). Effective prevention programs include empirically supported treatments and account for developmental considerations and cultural relevance. In addition, they recognize the many challenges to implementation of prevention programs, such as outreach and buy-in from various stakeholders (e.g., families, communities, and health agencies) (Dishion et al., 2015; Toth, Manly, & Nilsen, 2008).

A number of prevention programs target at-risk parents and families with home visits and parenting education and support (Mikton & Butchart, 2009; Toth, Sturge-Apple, Rogosch, & Cicchetti, 2015), with the greatest benefits observed for lower income, first-time adolescent mothers (Howard & Brooks-Gunn, 2009). Parent–child interaction therapy for at-risk families is associated with a reduction in rates of maltreatment and significant improvements in parenting and child well-being (Thomas & Zimmer-Gembeck, 2011). Identifying unmet needs in at-risk populations (such as formerly homeless mothers living in community housing) is another important part of the prevention process (Gewirtz & August, 2008; Lee et al., 2010). Mobilizing adults (such as teachers and other school staff) during transition periods (such as entry into elementary and high school) when already-vulnerable children are at risk for additional victimization is another prevention strategy (Finkelhor et al., 2009).

Key Terms

Stress (p. 129)
Coping (p. 129)
Allostasis (p. 130)
Allostatic load (p. 130)
Epigenetics (p. 131)
Toxic stress (p. 131)
Maltreatment (p. 134)
Sexual abuse (p. 134)
Physical abuse (p. 134)
Neglect (p. 134)
Emotional (or psychological) abuse (p. 134)
Acute stress disorder (p. 136)
Posttraumatic stress disorder (PTSD) (p. 136)
Developmental trauma disorder (p. 139)
Poly-victimization (p. 141)
Posttraumatic growth (p. 145)

Chapter Summary

- Stress occurs when the demands on the individual to adjust to the environment exceed available coping resources. Allostasis refers to the natural process of maintaining physiological and psychological stability in response to environmental demands. Allostatic load refers to the cumulative physiological and psychological wear and tear caused by ongoing (and sometimes maladaptive) allostatic processes.
- Coping involves the child's active attempts to respond to stress and adversity.
- Child maltreatment, including physical, sexual, and emotional abuse, as well as neglect, is a significant risk factor for immediate, short-term, and long-term negative developmental outcomes.
- Acute stress disorder involves the development of multiple psychologically based symptoms that last up to one month following exposure to a traumatic event. Posttraumatic stress disorder (PTSD) involves significant, specific symptoms that develop after a traumatic experience and last longer than one month.
- Maltreatment, and other forms of trauma, has both short- and long-term negative effects on neurological, psychological, and social development.
- A parent's own response to trauma has a significant effect on his or her child's symptom development, severity, and outcome.
- Resilience and recovery following trauma is related to health-promoting child, family, and sociocultural factors.
- Posttraumatic growth refers to positive changes following trauma.
- Multiple etiological factors, including genetic, physiological, individual, family, and environmental factors, interact in complex ways and lead to pathological responses to stress and trauma.
- Although a variety of treatment approaches are effective in treating symptoms related to maltreatment, trauma, and stress, prevention programs targeting at-risk families are especially important to the reduction of child maltreatment.

9 Attention Deficit/Hyperactivity Disorder

CHAPTER OUTLINE

Developmental Tasks and Challenges Related to Self-Regulation, Effortful Control, and Executive Function

Attention Deficit/Hyperactivity Disorder
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The Case of Tamara
Core Characteristics
Associated Difficulties and Domains of Impairment
Gender, Ethnicity, and Age
Comorbid Disorders

Developmental Course
Early Childhood Precursors
Child, Adolescent, and Family Outcomes
Adult Outcomes

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Physiological Factors
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Assessment and Diagnosis
Diagnostic Interviews
Rating Scales and Observations
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Intervention
Pharmacological Treatment
BOX 9:1 CLINICAL PERSPECTIVES: The MTA Cooperative Group Study
BOX 9:2 CLINICAL PERSPECTIVES: Medication and Children
Psychosocial Treatment
School Interventions
Interventions with Adults
Future Trends

ATTENTION DEFICIT/HYPERACTIVITY DISORDER (ADHD) is a disorder that is complexly determined, both overdiagnosed and underdiagnosed, and often inadequately treated. With its prevalence and readily recognizable symptoms of impulsivity, restlessness, and inattentiveness, as well as the fact that evaluations for ADHD account for a large proportion of referrals to children's primary care and mental health clinics (Campbell, Halperin, & Sonuga-Barke, 2014; DuPaul & Barkley, 2008), ADHD is a focus of controversy. In part, controversy results from the difficulty in distinguishing between *patterns of typically distributed characteristics* in children, including behavioral characteristics such as self-control, emotional characteristics such as temperament traits, and cognitive characteristics such as information-processing style, and a *clinically significant pattern* of behavioral, emotional, and cognitive characteristics. For individuals, families, and mental health professionals, ADHD is presumed to reside a few steps across a fuzzy boundary toward disorder and impairment.

Ongoing debates related to ADHD include the nature of children (boys in particular) and of schooling, the widespread use of psychotropic medication, and the extent to which those diagnosed with ADHD are "responsible" for their disorder. Given its significant impact on the development of self, relationships, and academic and vocational success, and the social and moral overtones of some discussions, ADHD requires thoughtful investigation.

Developmental Tasks and Challenges Related to Self-Regulation, Effortful Control, and Executive Function

Because ADHD is frequently diagnosed in the early school years, it makes sense to examine the normally occurring developmental challenges that children encounter as they make the transition to more structured school environments. We would not expect, for example, any six-year-old child to sit attentively through a 90-minute university lecture. A young child who fidgeted and was distracted in such a situation would not be showing evidence of ADHD. On the other hand, it is reasonable to expect a 10-year-old child to listen to a teacher's directions before beginning a classroom assignment, or to refrain from interrupting a classmate's comments. The child's consistent failure to do so might be cause for concern. In order to differentiate typical from atypical patterns, it is essential to understand the development of self-regulation, effortful control, and executive function.

Self-regulation (or self-control), involving one's own control of emotion, cognition, and behavior, refers to actions taken to achieve future goals despite conflicting desires in the present. "In every case, the alternative to self-controlled behavior—impulsivity—typically brings about short-term gratification at the expense of longer term goals" (Duckworth & Steinberg, 2015, p. 33). Self-regulation is distinct from *compliance* (discussed in Chapter 10), in which the child behaves appropriately in response to an external authority (Duckworth & Steinberg, 2015). Physiological, emotional, cognitive, and behavioral regulation develop across the lifespan, are associated with both consistency and stability, and are influenced by a host of factors, including brain development and relationships (Duckworth & Steinberg, 2015; Lewis, Todd, & Xu, 2010; McCabe & Brooks-Gunn, 2007). Depending on individual factors (e.g., genes, age, experiences) and environmental factors (e.g., parental support, specific types of academic or social challenges), a child may display appropriate self-regulation, underregulation, or overregulation (Calkins & Marcovitch, 2010; Nigg, 2013; Troy, 1989). Models of self-control vary in terms of numbers of components and the ways in which those components interact. One model proposes a *dual-influence framework* that identifies a set of processes that underlie impulsive, immediate gratification and another set of processes that underlie more intentional pursuit of longer-term goals (Duckworth & Steinberg, 2015; see Figure 9:1). Examining the relations between the developmental trajectories of these two sets of processes helps explain the drawn-out timeline for achieving self-control across various challenges and circumstances (Duckworth & Steinberg, 2015; see Figure 9:2).

Effortful control is an especially important mechanism of self-regulation. Increases in young children's effortful control and declines in impulsivity and distractibility are well described (Eisenberg, Hofer, Sulik, & Spinrad, 2014; Kopp, 1982, 1989). A number of factors influence the development of effortful control. Data suggest that genes, temperament, parent factors, sociocultural factors, and gene-by-environment interactions are all important (Deater-Deckard & Mullineaux, 2010; Karreman, van Tuijl, van Aken, & Dekovic, 2008; Kochanska, Philibert, & Barry, 2009; Li-Grining, 2007). In terms of temperamental style, for example, less angry and more inhibited children display higher levels of effortful control (Kochanska & Aksan, 2004).

One of the most frequently cited examples of effortful control occurs during Walter Mischel's "marshmallow test." In that procedure, how long a child resists a small, immediate reward (one marshmallow) for a later, larger reward (two marshmallows) is a measure of the child's ability to delay gratification (i.e., his or her

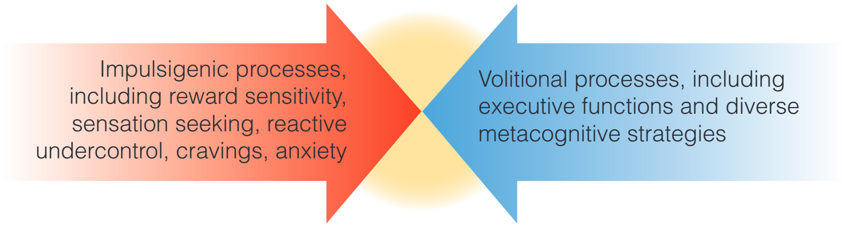
Impulsigenic processes, including reward sensitivity, sensation seeking, reactive undercontrol, cravings, anxiety
Volitional processes, including executive functions and diverse metacognitive strategies

FIGURE 9:1 A dual-influence framework for self-control.

Duckworth & Steinberg (2015). Unpacking self-control. *Child Development Perspectives, 9*, p. 33.

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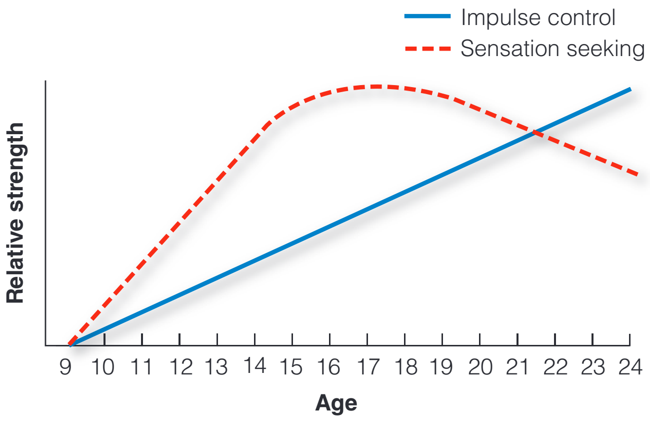

FIGURE 9:2 Distinct trajectories for impulse control and sensation-seeking across development.

Source: Duckworth & Steinberg (2015). Unpacking self-control. *Child Development Perspectives, 9,* p. 35.

"willpower"). Better delay-of-gratification abilities are associated with immediate and long-term psychological and social benefits (Mischel et al., 2011). In related research, other longitudinal studies of children's self-regulation suggest that such regulation also predicts better academic achievement, physical health, and personal wealth, and fewer criminal offenses (Eisenberg et al., 2014; Moffitt et al., 2011; Valiente et al., 2013).

With respect to self-regulation, effortful control, and ADHD, closer examination of the cognitive domain is important. **Executive function (EF)** includes those "cognitive processes that underlie goal-directed behavior and are orchestrated by activity within the prefrontal cortex" (Best & Miller, 2010); there are both basic and more complex forms of EF. With respect to basic forms, three interrelated but distinct components have been identified: inhibition, working memory, and shifting (Best & Miller, 2010; Zelazo, 2015). *Inhibition* involves delay (i.e., withholding a dominant or habitual response), conflict (i.e., making a response that is incompatible with the prepotent response), or termination (of a response already initiated or executed). *Working memory* involves maintaining and manipulating information over relatively brief periods of time and is the component that is most closely related to intelligence (Friedman et al., 2006). *Shifting* involves attentional control and/or conscious changes in mental states, rule sets, or tasks. Each of these EF components displays its own trajectory, from infancy through adulthood; these trajectories are linked to the "extremely protracted" development and maturation of the prefrontal cortex (PFC), especially the anterior attention system (Best, Miller, & Jones, 2009; Zelazo, 2015). There is ample evidence for strong genetic influence on each component (Engelhardt, Briley, Mann, Harden, & Tucker-Drob, 2015; Miyake & Friedman, 2012).

Planning, decision making, and deliberate problem solving are examples of more complex forms of EF. Zelazo and Carlson (2012) distinguish "hot" and "cold" EF by emphasizing the different degrees of emotion and motivation involved in types of problem solving and the connections to different areas of the prefrontal cortex. Most of the literature on EF involves relatively abstract tasks and reflects cold (or cool) EF; the marshmallow procedure reflects hot (or warm) EF. Hot contexts are more likely to undermine EF (Zelazo & Carlson, 2012).

Executive function is critical for success in a variety of child, adolescent, and adult domains. Diamond and Lee (2011) describe four EF qualities that underlie success: creativity, flexibility, self-control, and discipline. They assert that "children will need to think creatively to devise solutions never considered before. They'll need working memory to mentally work with masses of data, seeing new connections among elements. They'll need flexibility to appreciate different perspectives and take advantage of serendipity. They'll need self-control to resist temptations, and avoid doing something they'd regret. Tomorrow's leaders will need to have the discipline to stay focused, seeing tasks through to completion" (p. 959). Researchers and clinicians are paying special attention to the ways in which children and adolescents display combinations of more control strategies and more optimal control strategies. That is, it is important to have multiple strategies, but it is also important to select the strategy that is most likely to be effective in a particular situation (Chevalier, 2015; Zelazo & Carlson, 2012). External support and training can enhance the development, display, and successful implementation of EF (Conway & Stifter, 2012; Miyake & Friedman, 2012). Parental influences on EF include scaffolding (i.e., actions that help children engage with a challenging activity); stimulation (i.e., providing enriched experiences); sensitivity (i.e., associated with internalizing regulation); and control (i.e., supportive, positive control versus harsh, negative control) (Fay-Stammbach, Hawes, & Meredith, 2014). Family socioeconomic status (SES) also has an impact on children's EF, with low SES associated with poorer performance on EF tasks. EF performance is sensitive to changes in family and home environments, with better functioning when SES improves (Hackman, Gallop, Evans, & Farah, 2015). Among the effective interventions are computerized training, aerobics, mindfulness, and school programming (Diamond & Lee, 2011; Zelazo, 2015).

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Care must be taken to differentiate the active, often physical play of boys from the behavioral symptoms of ADHD.

With the increasingly frequent diagnosis of ADHD, there have been repeated suggestions that the very nature of children (especially boys) places them at greater risk for misidentification of disorders such as ADHD. Young children are active, boisterous, distractible, and willful. Many young boys exhibit very strong needs for extended periods of play, including rough-and-tumble play (Panksepp, 1998). These children often require parents and teachers to creatively, patiently, and repeatedly provide direction, redirection, assistance, and control. In combination with the requirements of early schooling, some adults may perceive some children's demanding characteristics as evidence of psychopathology. The accuracy or inaccuracy of these perceptions must be carefully evaluated with respect to the many varieties of developmentally *appropriate,* developmentally *meaningful,* and developmentally *necessary* challenges and struggles (Panksepp, 1998).

Attention Deficit/Hyperactivity Disorder

The Case of Christopher

Christopher is an 11-year-old boy in the fifth grade referred for a psychological evaluation by his parents following several meetings with school teachers and the assistant principal. Major concerns included Christopher's distractibility, difficulty completing tasks, verbal impulsivity, and restlessness. Christopher is a very bright, creative child who loves to read. His parents and teachers agree that he is happiest when he is busy, and he "always wants to do more." Christopher has a good sense of humor. And his teachers note that he has a long attention span in some situations, such as when he is absorbed in reading, which he especially enjoys.

But most of the time, Christopher does not listen or pay close attention to what is expected of him, is very easily distracted, and has difficulty organizing and following through with tasks. Christopher often forgets to bring needed items home from school and back to school from home. Christopher is also very fidgety and restless and has difficulty sitting still. As he gets up and moves about the room, sometimes making noises, he is distracting and disruptive to the other students. He sometimes carries toys with him and plays with them at inappropriate times. Christopher needs frequent reminders to stay focused, although he is usually cooperative when teachers intervene. He is proud of his excellent reading skills, but has been discouraged by his struggles with math and his difficulty completing schoolwork in a timely way.

Christopher's behaviors with others are also troublesome. He talks "incessantly" and often socializes when he should be doing schoolwork. Christopher is verbally impulsive, frequently blurting out remarks that are hurtful. He sometimes gets into conflicts with peers because of his impulsivity and his wish to be in charge. At home, Christopher and his brother "get each other going" and can together become "wild and crazy." His 14-year-old brother has been diagnosed with ADHD and has responded well to stimulant medication. ■

The Case of Tamara

Tamara is an eight-year-old girl in the second grade who was referred for an evaluation by her parents after consultations with school staff and her pediatrician. Her parents described Tamara's difficulty with schoolwork and chores, distractibility, and "spacing out." At the end of the previous school year, her report card included this teacher comment: "Tamara is easily distracted, though her off-task behaviors don't disturb others, only herself. She sometimes appears to daydream or be in her own little world. Tamara's distractions may be preventing her from working to her full potential." At the beginning of this school year, Tamara's new teacher also noticed her classroom difficulties, discussing with her parents her tendency to "drift off" and the slow pace of her work (Tamara is always the last to finish any assignment).

When asked about school, Tamara is positive, saying that she likes school, her teacher, and music class. Tamara says that she often needs extra time to complete assignments and acknowledges having difficulty listening, paying attention, and concentrating. She feels that this is particularly difficult when it is noisy in the classroom. Tamara also agrees that she frequently becomes frustrated with her own performance on school projects. At times, she may give up in disgust when she does not meet her own high standard.

Her parents describe Tamara as an affectionate, sensitive child who is usually cheerful and cooperative. She is "fun to be around." Tamara enjoys art and music and loves to sing. She is a very social child who has many friends. She may hang back briefly in new situations but warms up quickly. Tamara is occasionally fidgety but has never seemed hyperactive. Her parents agree that Tamara is easily distracted and needs frequent reminders to complete everyday tasks such as picking up her room or doing her homework. She often forgets or misplaces her belongings, is critical of herself for forgetting things, and worries about doing things right. Her parents believe that these behaviors are more problematic at school than at home. ■

Not all children present with identical clinical difficulties. There are differences in the particular symptoms displayed, the combination and severity of symptoms, and the range of impairment. In all cases of ADHD, however, the child's abilities to meet the day-to-day tasks and demands that depend on attention and impulse control—at school, at home, and during baseball or piano practice—are compromised. ADHD is characterized by a variety of specific behavioral and cognitive symptoms involving both developmental delays and developmental deficits in the areas of inattention, impulsivity, and hyperactivity. Although many individuals have the impression that ADHD is a uniquely American phenomenon, this is simply *not* the case. In surveys of North America, South America, Europe, Africa, Asia, Oceania, and the Middle East, the worldwide prevalence of ADHD is estimated to be between 2.2% and 5.2% (Erskine et al., 2013; Polanczyk, de Lima, Horta, Biederman, & Rohde, 2007). Differences in prevalence were most often associated with methodological factors (e.g., combinations of diagnostic criteria); few differences in prevalence were observed in comparisons between North America and Europe (Collishaw, 2015; Polanczyk et al., 2007). Interpretation of these data suggests that ADHD is a real disorder, not a social construct tied to permissiveness, and not a product of a profit-motivated pharmaceutical industry (Barkley, 2015a). Still, differences in worldwide prevalence rates and within the United States (see Figure 9:3) suggest that diagnosis may well be influenced by varied social and cultural expectations, values, and goals (Collishaw, 2015; Erskine et al., 2013; Singh, 2008).

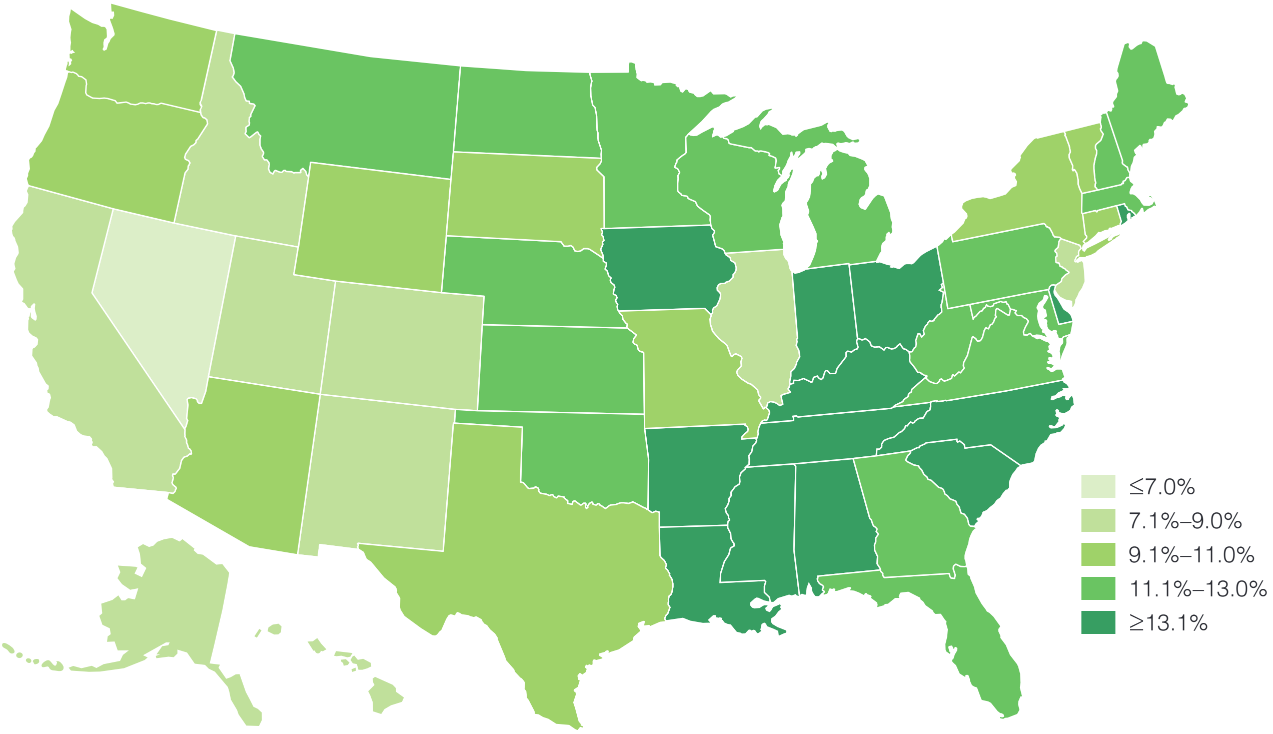

FIGURE 9:3 State-based Prevalence Data of ADHD Diagnosis.

Source: Percent of Youth 4–17 ever Diagnosed with Attention-Deficit/Hyperactivity Disorder: National Survey of Children's Health, 2011

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Core Characteristics

ADHD involves compromised functioning in two underlying dimensions: inattention and hyperactivity/impulsivity. The formal diagnosis of ADHD is based on atypical frequency, intensity, and impairment in either one or both dimensions (see Table 9:1). In Christopher's case, he meets the DSM-5 criteria for multiple symptoms of inattention, including failure to pay close attention to detail, difficulty in sustaining attention, not listening, not finishing schoolwork, difficulty organizing, distraction, and forgetfulness. Tamara also meets the DSM-5 criteria for problems with attention. Although inattention is more likely to be a problem with boring or repetitive tasks, it is also commonly observed in other contexts. For example, "once children begin to play on organized sports teams, parents and coaches often note that children with ADHD have trouble focusing on their own activity and, instead, are distracted by the game on the next field, the dog walking by, or the bees on the clover in right field" (Mayes, Bagwell, & Erkulwater, 2008, p. 154). With respect to hyperactivity/impulsivity, with its emphasis on poor self-regulation, only Christopher meets the DSM-5 requirement. Christopher's symptoms include his need to be busy, fidgeting, leaving his seat in the classroom, excessive talking, blurting out remarks, and intrusive interactions. In addition, both Christopher and Tamara display their difficulties at school and at home. And both Christopher and Tamara have struggled since their early elementary years with these problems. That these symptoms are exhibited in multiple settings and have been apparent for several years meets the additional DSM-5 criteria for pervasiveness, impairment, and age of onset.

TABLE 9:1 Attention-Deficit/Hyperactivity Disorder: Summary of DSM-5 Diagnostic Criteria

A. A persistent pattern of behavior that significantly interferes with functioning or development, as characterized by one or both of the following:
- Inattention (e.g., difficulty sustaining attention in tasks or play activities, difficulty organizing tasks and activities, easily distracted by extraneous activity, and often forgetful in daily activities)
- Hyperactivity and impulsivity (e.g., often leaves seat in situations when remaining seated is expected; physically overactive at inappropriate times and places; often "on the go," "as if driven by a motor"; talks excessively; has difficulty waiting for his or her turn; and often interrupts or intrudes on others)

B. Symptoms present prior to 12 years

C. Symptoms present in multiple settings

D. Symptoms interfere with social and academic functioning

Current conceptualizations of ADHD no longer emphasize different subtypes (or distinct categories) of disorder. Using the **two-factor model of ADHD,** descriptions of children as having predominantly hyperactive/impulsive difficulties, predominantly inattentive difficulties, solely inattentive difficulties, or combined difficulties reflect "a convenient clinical shorthand" and index their current presentations rather than any empirically valid distinctions related to etiology, functioning, or response to treatment (Willcutt et al., 2012). Research informed by the Research Domain Criteria (RDoC) emphasis on underlying biobehavioral dimensions (see Chapter 4, Box 4:1) is focused on temperament-based subgroups (Karalunas et al., 2014). Data from these studies provide new ways to link biological risk and behavioral dysfunction and lead to new hypotheses about early identification and intervention.

Another issue related to validity depends on the degree to which the particular symptoms of ADHD can be differentiated from the symptoms of other disorders, for example, oppositional defiant disorder or conduct disorder. Again, there are data that support the notion that the particular cluster of disruptive symptoms is different in children diagnosed with ADHD compared to children diagnosed with oppositional defiant disorder (Martin et al., 2010). Keep in mind, however, that many of the symptoms of ADHD might be reconceptualized as beneficial in certain contexts. High levels of energy, creativity, out-of-the-box thinking, and positive emotionality are observed in many children with ADHD and are likely to contribute to a number of positive outcomes (Kiser, Rivero, & Lesch, 2015).

Associated Difficulties and Domains of Impairment

There are many associated difficulties related to ADHD and many domains in which ADHD compromises achievement and well-being. Problems in school are almost always evident. Academic struggles include reading problems, difficulties with homework, and overall lack of achievement (Campbell et al., 2014). For many children, multiple classes with multiple teachers overwhelm limited coping skills. "Difficulties are especially conspicuous upon entry into the fourth and seventh grades, when classroom demands and academic assignments become increasingly more complex, take longer to complete, and rely heavily on one's ability to work independently" (Rapport, 1995, p. 357). For teachers, students with ADHD pose many challenges, with stressors related to student achievement, student behavior, and various forms of treatment for ADHD (Greene, Beszterczey, Katzenstein, Park, & Goring, 2002). Given the short- and long-term consequences of school-related difficulties, it is essential that children's opportunities for learning be fully supported.

Family disturbances are also frequent complications. A child's impulsive, oppositional, and sometimes destructive behaviors may require near constant supervision and tax many parents' abilities and sympathies. Given the on-again, off-again self-control displayed by children with ADHD, common parenting practices such as reasoning and scolding do not usually help, resulting in many instances and various intensities of parent–child conflict (DuPaul & Barkley, 2008). Sibling relationships may also be affected because of frequent conflicts with each other or because of difficulties with family routines or outings. Children with ADHD often experience poor sleep and shortened sleep; these difficulties are likely to exacerbate the clinical symptoms and other struggles associated with ADHD (Gregory & Sadeh, 2015).

Some of the most common and most distressing difficulties associated with ADHD are related to social dysfunction (Hoza et al., 2005). Inattention, restlessness, and impulsivity make it difficult for children with ADHD to establish rapport with other children, to pay heed to other children's emotional and behavioral messages, and to negotiate disagreements in thoughtful ways. The most significant social skills deficits appear in three areas: communication, poor emotional regulation, and cognitive biases (i.e., routinely interpreting ambiguous information as negative). For some children, these deficits lead to conflictual and ineffective peer relationships; for others, social withdrawal and/or rejection occurs (Paulson, Buermeyer, & Nelson-Gray, 2005). Overall, Hoza et al. (2005) report that children with ADHD are less well liked and have fewer friends.

Recent investigations have documented specific behaviors that may help explain the origin of some social difficulties. Ronk, Hund, and Landau (2011) report that although children with ADHD sometimes use competent strategies to enter peer groups, they rely more often on incompetent strategies (e.g., disruptive attention getting) that interfere with entry and lead to negative peer reputations. In addition to the negative impact on the child's place in the culture of playgrounds, birthday parties, and friendships, there is also a negative impact on collaborative learning situations, where academic success depends on smooth working relationships.

Gender, Ethnicity, and Age

One of the most replicated and controversial findings in ADHD research is the striking gender difference in diagnosis. Boys receive diagnoses of ADHD *four to five times more often* than do girls. One explanation of the gender difference is that many more boys are diagnosed with the predominantly hyperactive subtype because parents and teachers misperceive boys' greater activity levels and impulsivity as evidence of psychopathology. Even in the case of roughly similar behaviors, boys may be the focus of heightened concern, increased control, and earlier interventions.

Although there is continuing research on the clinical characteristics of ADHD in girls and children of various ethnic backgrounds, there are data that suggest that, for the most part, all children diagnosed with ADHD struggle in similar ways with the core symptoms of the disorder (Bauermeister et al., 2007; Biederman et al., 2005). In a review of 18 studies comparing the clinical presentations of girls and boys with ADHD, Gaub and Carlson (1997) reported overall similarity. In studies of ADHD in African American children, data suggest that African American children display somewhat more symptoms but are diagnosed *less frequently* than European American children. This pattern may be related to African American parents' beliefs about ADHD and lack of treatment access or utilization. It is important to explore more fully "how aspects of African American culture, identity, and experience influence perceptions of ADHD and its treatment" (Miller, Nigg, & Miller, 2009, p. 84).

Adolescents, like the younger boys and girls of diverse ethnic backgrounds, present a similar picture of symptoms, impairments, and comorbid disorders (Campbell et al., 2014). There are no data that support the hypothesis that individuals diagnosed earlier in childhood have more severe clinical difficulties than those diagnosed in later in childhood (Kieling et al., 2010). It is likely that other factors contribute to the timing of diagnosis in certain children and adolescents. For instance, many clinicians recognize that higher levels of cognitive functioning and the display of predominantly inattentive characteristics are associated with later diagnoses, when there are greater demands placed on children's organizational skills, efficiency, and autonomy. Finally, two

Brad Wilson/Getty Images

Some children with ADHD struggle primarily with problems with inattention, but not impulsivity or hyperactivity.

recent patterns of diagnosis are noteworthy. First, ADHD is being identified at earlier ages, with many preschoolers meeting the diagnostic criteria. Second, ADHD is also increasingly identified at later ages, into adulthood, with adults displaying similar (although somewhat age-adjusted) patterns of symptoms (Campbell et al., 2014).

Comorbid Disorders

As children with ADHD get older, there are increasing rates of additional diagnoses, including both internalizing and externalizing disorders (Campbell et al., 2014; Costello & Maughan, 2015; Pliszka, 2015). Some common comorbid disorders include oppositional defiant disorder, conduct disorder, mood and anxiety disorders, learning disabilities, tic and other movement disorders, and substance use disorders (Kessler et al., 2014; Molina & Pelham, 2014; Singh, 2008; see Figure 9:4). The period of highest risk for the onset of additional disorders appears to be in adolescence, although some research suggests that early adulthood is also a time of concern for young women (Costello & Maughan, 2015). Patterns of comorbidity (i.e., the particular combinations of two or more disorders) appear similar for boys and girls and for children and adolescents (Erskine et al., 2013; Kessler et al., 2014). Hypotheses about the frequency of overlapping disorders include shared genetic etiologies, interactions between children with ADHD and their environments (parents, teachers, and peers), and complications from unrecognized or undertreated ADHD.

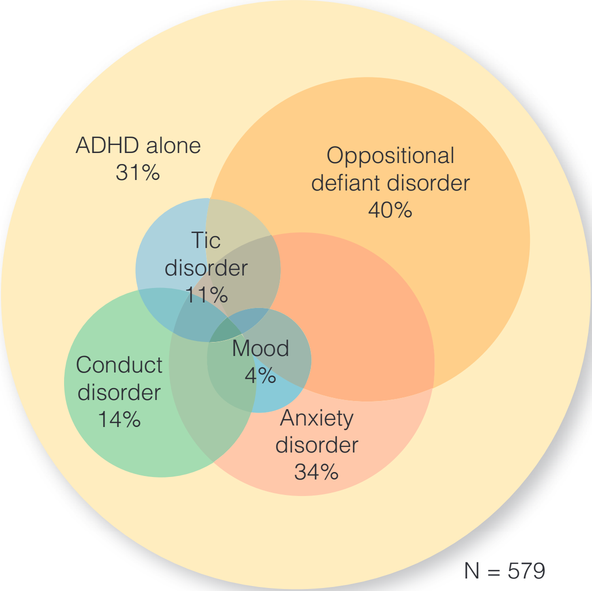

FIGURE 9:4 Co-occurring disorders in the Multimodal Treatment Study of children with ADHD.

Only a third of the children in the study had a diagnosis of ADHD alone. More than half of the children had conduct or oppositional defiant diagnoses in addition to having ADHD, and a significant proportion of those with conduct and oppositional diagnoses also had an anxiety disorder.

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Developmental Course

Although there is a great deal of individual variability in clinical presentation and patterns of chronicity, with meaningful improvement and remission observed in a minority of children, a diagnosis of ADHD demonstrates significant stability over time (Costello & Maughan, 2015; Faraone, Biederman, & Mick, 2006; Willcutt et al., 2012). It is important to note that particular patterns of symptoms may change across development. Many individuals, for instance, display lower levels of hyperactivity over time and higher levels of inattention (Costello & Maughan, 2015). Even with changes in symptom patterns, measures of quality of life, from both parent and child perspectives, illustrate the lasting negative impact of ADHD on multiple domains of functioning (Barkley, 2017a; Danckaerts et al., 2010; Kessler et al., 2014). These outcomes must be considered at the same time as we acknowledge the potential for positive experiences that may accompany the high energy and positive emotionality displayed by children and adolescents with ADHD (Kiser et al., 2015).

Early Childhood Precursors

Babies with difficult temperaments who exhibit excessive activity, poor sleeping and eating, and high levels of reactivity and low levels of regulation are at greater risk for development of ADHD (Campbell et al., 2014; Rabinovitz, O'Neill, Rajendran, & Halperin, 2016). Deficits in the development of self-regulation are fairly stable in the early years, with the majority of children who will later be diagnosed with ADHD displaying poor inhibition and inattention in their preschool years (Campbell et al., 2014). These preschoolers are described as "on-the-go," "into everything," very curious, and disobedient. Tantrums, aggression, and fearless behaviors are particularly noteworthy (Jester et al., 2005). There is clear evidence of stability between the preschool and the early school years for children with the most severe symptoms (Campbell et al., 2014; Lahey et al., 2016). Indeed, young children who exhibit significant struggles early on continue to display impairment years later (Sasser, Kalvin, & Bierman, 2016).

Three kinds of impairment are observed for early emerging ADHD: developmental delays, deficient preacademic skills, and problems with social skills and relationships (Sonuga-Barke & Halperin, 2010). Several developmental trajectories of disruptive disorders have been described for children with early emerging difficulties (Lahey et al., 2004; Sonuga-Barke & Halperin, 2010). One type involves a pattern in which early difficulties are not clinically significant but become so over time (as a result of some combination of genetic and/or environmental factors). Another type involves a "preschool-limited" pattern, in which early difficulties that are clinically significant improve over time (as a result of some combination of protective factors). Yet another type, with more severe early problems, persists and in some cases deteriorates over time. For some children, symptoms and impairment appear later. School entry, with its increased structure and demands, may be "an especially important provoking factor" (Sonuga-Barke & Halperin, 2010, p. 378). These various types reflect the heterogeneity of ADHD phenotypes and pathways.

Child, Adolescent, and Family Outcomes

As children with ADHD get older, difficulties across multiple domains are observed. With each subsequent grade, the school setting presents new "challenges as children need to follow stricter rules for self-regulation of behavior, follow classroom routines, attend to lessons and assignments, and cooperate in larger peer groups" (Campbell et al., 2014, p. 431). With respect to their academic and educational status, children and adolescents with ADHD use more school-based services and experience more frequent suspension and expulsion (Campbell et al., 2014). Overall, poor educational outcomes are more common (Costello & Maughan, 2015; Sasser et al., 2016).

In family settings, noncompliant and negative behaviors often occur more frequently, particularly related to issues of responsibility (e.g., chores), rights and privileges (e.g., driving), and social activities (DuPaul & Barkley, 2008). Children and adolescents whose parents are inconsistent or ineffective with discipline are more likely to continue to display clinically significant symptoms (Sasser et al., 2016). Risky behaviors are also more prevalent, with various problematic outcomes, including driving accidents, substance abuse, and teen pregnancy (Costello & Maughan, 2015; DuPaul & Barkley, 2008). For families, the personal and economic costs of ADHD may be especially burdensome.

Peer problems remain especially significant. Murray-Close et al. (2010), building on the work of Masten and Coatsworth (1998), describe "developmental cascades and vicious cycles" related to the negotiation of several typical developmental challenges; these include engaging in socially appropriate conduct, forming a coherent sense of self, and forming friendships. Murray-Close and colleagues assert that children with ADHD often fail to develop appropriate social skills, which increases the risk for peer rejection. Peer rejection then impairs the ongoing development of additional social skills, leading to further rejection. At the same time, children with ADHD, like all children, are evaluating their personalities and abilities as they construct a sense of self. Children with ADHD may internalize the negative views of peers, or they may compensate by developing overly positive self-perceptions. These self-perceptions may lead to other difficulties. "For example, children with behavioral problems and poor social skills who nonetheless maintain positive self-perceptions in these domains will likely be unmotivated to alter their behavior, leading to sustained problems across development" (Murray-Close et al., 2010, p. 787).

As noted in this chapter's earlier section on comorbid disorders, adolescence is a period of concern, with researchers paying close attention to developmental pathways that include disruptive disorders and substance use (Campbell et al., 2014; Costello & Maughan, 2015; Molina & Pelham, 2014). The combination of ADHD and conduct problems, for example, is associated with poor adult outcomes for both girls and boys (Owens & Hinshaw, 2016). Better outcomes are observed when parents are more involved in their adolescent children's lives (Howard et al., 2016). One positive finding to note: a large-scale national study suggests that early identification of ADHD combined with medication treatment is associated with lower risk of adolescent substance use (McCabe, Dickinson, West, & Wilens, 2016).

Adult Outcomes

Many individuals continue to experience difficulties related to the core symptoms of ADHD and related disorganization, poor concentration, procrastination, and negative mood throughout adulthood (Campbell et al., 2014). Poor educational outcomes and poor health have also been documented (Costello & Maughan, 2015). Special attention must focus on young women with a history of ADHD, maltreatment, and risk-taking behaviors; these women are at increased risk for internalizing disorders and self-harm (Guendelman, Owens, Galan, Gard, & Hinshaw, 2016; Swanson, Owens, & Hinshaw, 2014). Impairments may stabilize in young adulthood, particularly for those attending college (Howard et al., 2016); this highlights the need for adequate support for adults with ADHD in higher-education settings, as well as in employment (Campbell et al., 2014). Many adults with ADHD report positive well-being and satisfaction, with the ability to pursue activities and employment that capitalize on the positive characteristics (e.g., energy, creativity) described in earlier sections (Barkley, 2017a; Kiser et al., 2015).

Etiology

ADHD has been described as a "common, complex, and heterogeneous" disorder (Scerif & Baker, 2015, p. 252), and as a "dimensional disorder of deficits with an admixture of potentially beneficial traits" (Kiser et al., 2015, p. 284). What these descriptions share is an emphasis on multiple etiological factors, with ADHD as the *final common pathway* of combinations of different types of predisposing conditions and events. Recent investigations of the causes and course of ADHD highlight the complex interplay of genetic vulnerability, brain processes, cognitive functioning, and environmental factors in order to provide explanations for diverse phenotypes and trajectories.

Genes and Heredity

The high heritability of attention deficit/hyperactivity disorder is well established in numerous family studies, twin studies, and adoption studies. Across these studies, a **polygenic model** of ADHD is proposed, taking into account both rare and common genetic variants affecting a wide range of brain functions (Campbell et al., 2014; Scerif & Baker, 2015). It is clear that "many genes of small effects are implicated in ADHD," "with effects operating in different ways in different individuals" (Sonuga-Barke & Halperin, 2010, p. 374).

New meta-analytic studies suggest that the genetic influences are distinct for the core symptom dimensions of ADHD, with 71% of the genetic variance explained for inattention and 73% of the genetic variance explained for hyperactivity/impulsivity (Nikolas & Burt, 2010). Dominant genetic effects were larger for inattention, and additive effects were larger for hyperactivity/impulsivity (Nikolas & Burt, 2010). Related research provides additional data that genetic influences are also important for components of self-regulation, effortful control, and EF (Bell & Deater-Deckard, 2007). Recent research has also differentiated genetic influences on baseline levels of ADHD symptoms from genetic influences on the developmental course of the disorder. This research suggests that genetic influences on atypical trajectories of cortical development may help explain why some children improve over time and others do not (Pingault et al., 2015).

Molecular analyses are currently focused on the identification of specific gene locations (Neale et al., 2010) and also provide information related to the frequent comorbidity observed in children and adolescents with ADHD. Research findings suggest overlapping genetic influences for ADHD, autism spectrum disorder, and intellectual developmental disorder (Kiser et al., 2015), as well as for ADHD and learning disabilities (Pennington, 2015). Compared to genetic etiologies described for intellectual developmental disorder or autism spectrum disorder, "the genes associated with ADHD have expression patterns that peak later in development" (Johnson et al., 2015, p. 438). In addition, numerous studies document the overlap between ADHD and both internalizing and externalizing disorders, with attention focused on shared genetic and physiological risk factors. Gene-by-environment research has identified several promising interactions. For example, genetic variants that have an effect on the regulation of dopamine and serotonin interact with psychosocial factors to influence the severity of ADHD symptoms (Nigg, 2013; Nigg, Nikolas, & Burt, 2010).

Physiological Factors

With increasingly sophisticated neuroimaging techniques, areas and processes of the brain that are implicated in ADHD can be identified. Areas of the brain that have been examined include the frontal lobes, the anterior cingulate cortex (a key area for coordinating top-down and bottom-up processing, associated with the attention system), the corpus callosum, the temporal lobes, and the striatal regions. With respect to brain structure, ADHD is associated with smaller brains and reduced cortical thickness in regions linked to reward and motivation. Some of these differences appear early in development but are no longer evident in adolescence, suggesting a delayed pattern of development (Campbell et al., 2014; Shaw et al., 2009). Atypical connectivity is also observed (Campbell et al, 2014; Kiser et al., 2015). Later development of the prefrontal cortex is hypothesized to underlie some of the improvement in symptoms observed over time (Johnson, 2012). And this variability in brain plasticity provides critical information about developmental trajectories and the timing of windows for both prevention and intervention (Johnson, Jones, & Gliga, 2015).

Given the widespread influence of neurotransmitters on prefrontal functions, many studies have focused on neurotransmitter dysfunction in the development and maintenance of ADHD (Campbell et al., 2014). Investigations of dopamine, serotonin, and noradrenaline are ongoing. Dysfunction of the dopamine reward pathway appears to be associated with motivational deficits (Volkow et al., 2011). Serotonin variations are linked to delay aversion (Sonuga-Barke et al., 2011).

Other aspects of neurophysiological functioning are also implicated. Recent research has identified atypical processing related to emotional reactivity, self-regulation, and effortful control (Musser et al., 2011; Posner et al., 2011; Wiersema & Roeyers, 2009). Prenatal and postnatal complications and low birth weight are associated with many aspects of physiological regulation (Campbell et al., 2014; Mill & Petronis, 2008). In addition, the role of sleep disturbances, as well as their effects on efficient self-regulation, are important to consider (Alfano & Gamble, 2009). Overall, genetic, neuropsychological, and psychopharmacological research provides strong converging evidence that central nervous system dysfunction may underlie the disruptions in a multicomponent self-regulatory system and the development of ADHD (Campbell et al., 2014; Pennington, 2015; Scerif & Baker, 2015).

Psychological Factors

Among the most widely researched variables underlying the development of ADHD are cognitive factors, especially those related to decision making and executive function. For children with ADHD, "alterations in multiple brain systems interact . . . to produce decision making that is both *deficient* (i.e., inefficient, insufficiently reflective, and inconsistent) and *impulsive* (biased toward immediate over delayed alternatives)" (Sonuga-Barke et al., 2016). Meta-analyses suggest that children with ADHD exhibit weaknesses in several aspects of EF, with the strongest effects related to response inhibition, vigilance, working memory, and planning (Barkley, 2015b; Willcutt, Doyle, Nigg, Faraone, & Pennington, 2005). As noted in Chapter 7's discussion of children with autism spectrum disorder, strong EF skills, in contrast, are hypothesized to be a protective factor (Johnson, 2012).

Recent EF work has focused on the distinction between hot and cold EF, and emphasizes that hot EF decision making is particularly problematic (Woltering, Lishak, Hodgson, Granic, & Zelazo, 2016). The worse the EF deficits, the more likely it is that a child with ADHD also has accompanying learning disabilities (Mattison & Mayes, 2012). Some adolescents and young adults with ADHD who show recovery over time display improvements in EF, whereas others continue to exhibit EF impairment (Halperin, Trampush, Miller, Marks, & Newcorn, 2008; Miller, Ho, & Hinshaw, 2012).

Research on *sluggish cognitive tempo*, a distinctive component of the clinical presentation of some children (including Tamara), provides additional information about ADHD. Sluggish cognitive tempo includes varied combinations of drowsiness, daydreaming, lethargy, and slowed thinking (Lee, Burns, Snell, & McBurnett, 2014), and is associated with higher levels of anxiety, depression, withdrawn behavior, and lower levels of academic and social competence (Lee, Burns, Snell, & McBurnett, 2014). Whether sluggish cognitive tempo is an overlapping dimension of the inattention dimension of ADHD or its own disorder requires additional investigation (Barkley, 2014). While studies continue, Barkley (2015c) calls for a change in terminology (to *concentration deficit disorder*) that is less negative and stigmatizing.

Temperament, personality, and age of the child also appear to have an impact on the development of ADHD. As noted previously, temperamental reactivity and regulation may increase a child's risk for ADHD (Shaw, Stringaris, Nigg, & Liebenluft, 2014; Rabinovitz et al., 2016). Two processes may be particularly important: "bottom-up" processing, which is adversely affected by immediate emotional incentives; and "top-down" processing, which is less responsive to new information. Impulsivity–hyperactivity is related to the incentive response systems, and inattention to the effortful control system (Nigg, 2010; see Figure 9:5). Rabinovitz et al. (2016) also links early negative emotionality with negative impact on subsequent

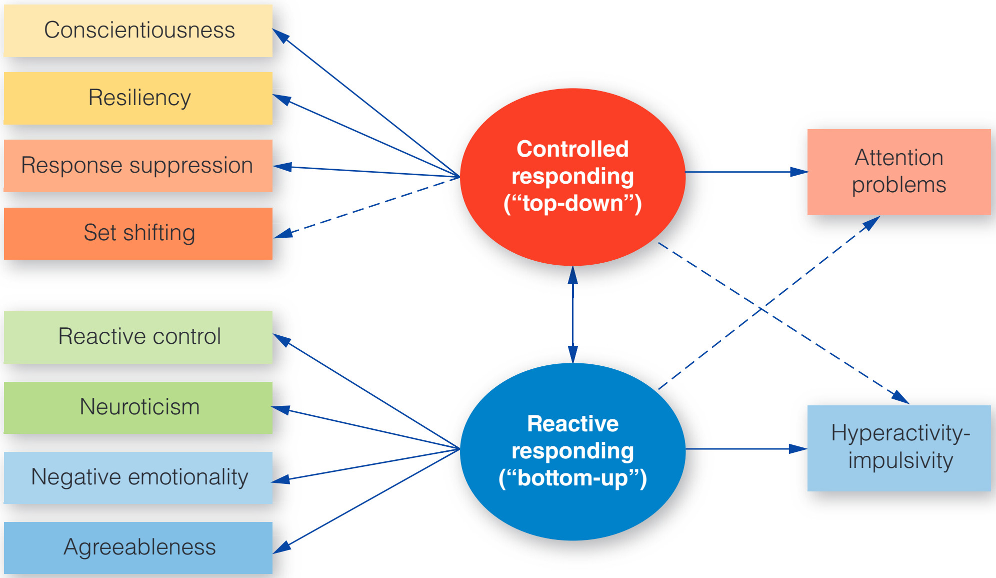

FIGURE 9:5 "Top-down" and "bottom-up" psychological processes hypothesized to influence ADHD.

Source: Nigg (2010). Attention-deficit/hyperactivity disorder endophenotypes, structure, and etiological pathways. *Current Directions in Psychological Science, 19*(1), 24–29, copyright © 2010 by Sage. Reprinted by Permission of SAGE Publications.

executive functions and more severe ADHD symptoms. Emotion dysregulation, especially connected to frustration, anger, and impatience, is an important contributing factor and helps explain the emotional and social difficulties experienced by individuals with ADHD (Barkley, 2015d). Motivational deficits, related to sensitivity to reward and punishment, have also been observed (Campbell et al., 2014; Sonuga-Barke & Halperin, 2010). Finally, with respect to relative age in classroom settings, rates of ADHD in the youngest children in elementary school grades are 8.4%, compared to 5.1% of their older peers. This suggests that teacher ratings of problematic behaviors in developmentally less mature children may influence the diagnostic process (Elder, 2010).

Family and Environmental Factors

There is almost no empirical evidence supporting the hypothesis that family or environmental factors alone contribute to the *development* of ADHD; however, numerous studies have described ways in which these factors have a role in the *maintenance and exacerbation* of the disorder. With respect to the development of disorder, the gene by environment interactions discussed previously suggest that certain parent or family factors may influence the emergence of disorder in at-risk children. With respect to the maintenance or exacerbation of the disorder, Johnston and Freeman (1997) compared the attitudes of parents of children with ADHD and parents of children without behavior disorders. In general, most parents tended to rate children's behaviors as internally caused and controllable. However, parents of children with ADHD accepted less responsibility for child behaviors and rated impulsivity and oppositional behaviors as more internally caused and controllable than parents of children without behavior disorders did. Parents of children with ADHD viewed impulsivity as more persistent across time, and prosocial behaviors as less consistent than parents of children without ADHD. All parents responded negatively to oppositional behaviors, but parents of children with ADHD responded even more negatively. In addition to these cross-family data, there are data suggesting that parent–child interactions differ within families (i.e., nonshared environmental influence), depending on a particular child's ADHD status (Cartwright et al., 2011). These results suggest that parental beliefs about ADHD and about their children may contribute to an increasingly destructive cycle of negative interpretations and blame, as well as harsh and intrusive parenting, making it difficult to intervene effectively (Musser, Karalunas, Dieckmann, Peris, & Nigg, 2016; Sonuga-Barke & Halperin, 2010). These types of family factors may, in fact, tell us more about the risk for the development of comorbid disorders such as oppositional defiant disorder or conduct disorder than about the ADHD (Pliszka, 2015).

Environmental factors have also received renewed attention. In addition to the many prenatal and perinatal environmental risks, such as exposure to nicotine, alcohol and other drugs, and poor prenatal nutrition

(Campbell et al., 2014; Kiser et al., 2015; Nigg, 2013), children with ADHD have higher levels of lead in their blood (Froehlich et al., 2009; Nigg, Nikolas, Knottnerus, Cavanagh, & Friderici, 2010). Exposure to lead is linked to lower IQ and more ADHD symptoms (mainly the impulsive/hyperactive domain). The "near universal exposure is important because it means lead can function as a widely shared environmental trigger," that in combination with other measures of genotype and stress, may help explain rates of ADHD (Nigg, 2010, p. 27).

Assessment and Diagnosis

We know that ADHD is a disorder that is often mistaken for a child's lack of ability or effort, stubborn willfulness, or the result of lackadaisical parenting. In addition, perhaps more so than any other childhood disorder, ADHD is a disorder that frequently co-occurs with other disorders. Given these circumstances and the fact that there is no specific psychological or neurological test for ADHD, we must pay careful attention to the particular criteria that lead to an accurate diagnosis of ADHD. As already emphasized, ADHD reflects deficits and/or delays in key behavioral, cognitive, and emotional abilities. Assessment of children, adolescents, and adults depends, first and foremost, on appropriate knowledge of typical development. "Children with ADHD are most often referred for assessment between the ages of five and eight, when their high energy level, fidgetiness, and difficulty sitting still, disorganization, lack of persistence on cognitive tasks, poor concentration, difficulty regulating their behavior in social situations, and lack of social judgment lead to a myriad of social and academic problems" (Campbell et al., 2014, p. 430). Clinicians, then, must assess how these difficult behaviors are distinct from "age-related and transient behaviors reflecting high energy, exuberance, and/or uneven development" (p. 430). Clinicians must look for more frequent behaviors, more intense behaviors, and more impairment. In addition to the continuity between typical and atypical patterns, onset-related and developmental transitions must be considered because, as described previously, the pattern and severity of symptoms may change over time.

Diagnostic Interviews

Interviews are often conducted with children, parents, and teachers. Parents and teachers usually provide more useful data because children (and even adolescents) are not always aware of or able to describe their difficult behaviors (Smith, Pelham, Gnagy, Molina, & Evans, 2000). And although the information provided by parent and teacher reports is almost never exactly the same, research suggests that clinical diagnoses of ADHD that are based on parent reports are likely to be confirmed by teacher reports (Biederman, Faraone, Milberger, & Doyle, 1993). That said, it is essential to appreciate the factors that may influence parent and teacher descriptions of problem behaviors. For instance, parents of preschoolers may perceive certain problem behaviors as typical and put off seeking help (Maniadaki, Sonuga-Burke, Kakouros, & Karaba, 2007). Teachers may respond differently to similar behaviors in boys versus girls and refer boys for evaluation more often than girls (Sciutto, Nolfi, & Bluhm, 2004). As noted earlier in the section on etiology, teachers may be strongly influenced by the relatively less mature functioning of the younger children in their classes (Elder, 2010). Lastly, it is important to take into account cultural variations in mental health attitudes and knowledge (Bussing, Gary, Mills, & Garvan, 2007).

Comprehensive interviews, in addition to providing baseline data, may reveal information about a family history of ADHD or the presence of additional disorders. In addition, careful review of the relations between the particular patterns of deficits and the demands of particular settings is important. With ADHD, the assumption is that the core difficulties are present from early childhood and are *not* the result of a specific stressor. Diagnosis of adult ADHD remains clinically problematic, given that there is no clear consensus on the criteria for adult ADHD. Additional work in this area is essential and ongoing (Barkley, 2017b). Another consideration in judging the presence of ADHD and making differential diagnoses is whether or not the identified symptoms are better accounted for by another disorder. Many disorders, such as depression, generalized anxiety disorder, or schizophrenia, can disrupt the basic cognitive and behavioral processes that are the core features of ADHD. In the case of these other disorders, however, symptoms such as poor concentration and impulsivity are secondary problems relative to the primary disorder.

A final consideration is that, most often, primary care physicians (such as pediatricians) rather than mental health professionals (e.g., clinical psychologists or psychiatrists) assess and diagnose ADHD in children and adolescents and prescribe medications as treatment. It may be that diagnosis occurs with "less than full rigor because of the intense economic and time constraints they face, coupled with their training (or lack thereof) in the area of mental disorders" (Mayes et al., 2008, p. 157). Programs that are designed to increase primary

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Continuous Performance Tests such as this one use computers to assess selective attention and impulse control.

care providers' standardization, accuracy, and consultation are promising (Mayes et al., 2008)

Rating Scales and Observations

In addition to interview data, there are a number of available rating scales for parents and teachers, specifically designed to assess the symptoms of ADHD and provide information about the degree to which an individual deviates from well-established norms. For the most part, these scales provide reasonably accurate and, in some cases, compelling information about the likely presence of ADHD. The widespread use of teacher rating scales, however, has been the focus of several investigations concerning the assessment of students of various racial and ethnic backgrounds. The role of race and culture, as well as the potential for bias, must be carefully addressed (Hosterman, DuPaul, & Jitendra, 2008; Nigg, 2013). The increased presence and expanding role of school psychologists provide valuable perspective on school-based referrals and treatments (DuPaul & Stoner, 2014). Most assessment observations are done in the school because some children's abilities to exhibit self-control and maintain attention in the structured office setting may not reflect typical behavior. Ideally, observations should be made in a variety of settings (e.g., in school and at home) with different environmental demands, so that patterns of difficulties are clearly identified and specific treatment plans can be designed.

Although not definitive by themselves, a variety of continuous performance tests are often used as part of an ADHD assessment (Nichols & Waschbusch, 2004). These tests generally involve monitoring stimuli (visual, auditory, or both) and responding selectively to instructions. For example, letters might be presented on a computer screen and the child told to respond to a certain target letter, but not to others. These tests measure various attention and impulse control skills, including the ability to remain vigilant, to demonstrate consistency of attentional focus, to respond quickly, and to inhibit responding. In many cases, additional assessment related to academic achievement is often conducted, including intelligence testing and assessment of learning disabilities. Medical evaluations are also sometimes included as part of the assessment plan.

Differential Diagnosis

As described earlier, an important consideration in the assessment and treatment of ADHD involves differential diagnosis and identification of comorbid problems. These tasks are especially important because many of the symptoms of ADHD, such as executive function and attention deficits and poor self-regulation, are also observed in other disorders (e.g., oppositional defiant disorder, anxiety disorders, autism spectrum disorders, motor coordination problems, and learning disabilities) (Rommelse et al., 2009). Whether the child or adolescent presentation best fits a single diagnosis of ADHD or multiple diagnoses has implications for treatment planning. For example, more comprehensive treatments for ADHD combined with oppositional defiant disorder are indicated. It is also critical to determine if an anxiety or mood disorder complicates the clinical presentation and must be addressed in treatment.

Intervention

Given children's ADHD-related experiences and impairment, many different interventions have been proposed, with varying success. Interventions for preschoolers, elementary-school-aged children, adolescents, and adults have all been investigated. Medications and psychosocial treatments receive the most empirical and clinical support (Campbell et al., 2014; Fabiano et al., 2009; Pliszka, 2009). Multicomponent treatments that include medication, cognitive-behavior therapy, and social skills training for children, and parent training and education are particularly successful (Costello & Maughan, 2015). There is also a current focus on integrated interventions for children, parents, and teachers (Pfiffner et al., 2014).

Even with data suggesting that combined treatments are more effective for many children, the cost effectiveness of treatments certainly comes into play. Medication treatments are the least expensive, followed by psychosocial

BOX 9:1

Clinical Perspectives

The MTA Cooperative Group Study

There are frequent criticisms that research in developmental psychopathology often fails to take into account the realities of actual children in complicated circumstances. In ADHD outcome-oriented research, such criticism has focused on studies of the short-term impact of stimulant medications (neglecting possible long-range negative consequences) and the inadequate consideration of multicomponent intervention strategies (neglecting the whole child to focus on problematic symptoms). The Multimodal Treatment Study of Children with Attention Deficit/Hyperactivity Disorder (MTA) Cooperative Group Study is an effort to comprehensively address previous research shortcomings (Jensen et al., 2007; MTA Cooperative Group, 2004; Molina et al., 2009).

The MTA Cooperative Group Study included six independent research teams (in San Francisco; Los Angeles; Durham, North Carolina; New York; and Pittsburgh) working in collaboration with the National Institute of Mental Health and the U.S. Department of Education. Comparisons of the long-range efficacy of a 14-month-long intervention (i.e., looking at 14-month, 24-month, 36-month, and eight-year outcomes) in 579 children with ADHD were conducted for medication management, intensive behavioral treatment, a combined approach, and community care. Numerous outcome measures were identified, including reduction in the core ADHD symptoms, personal adjustment, academic achievements, and improvements in social skills and relationships.

Across multiple settings and a diverse sample of children, strong support for medication management was demonstrated at the 14-month evaluation, with some additional benefits observed for the combined medication/behavioral treatment strategy. At this first assessment, peer-related functioning continued to be very problematic, although treatment appeared to reduce additional diagnoses of oppositional defiant disorder, conduct disorder, and anxiety disorder (Hechtman et al., 2005; Hoza et al., 2005). By 36 months, many of the advantages of the combined treatment had diminished, although all treatment groups maintained improvements over baseline.

Many of the children showed clinically significant improvements across five domains of functioning; others showed improvements that were less dramatic and less far reaching (Karpenko et al., 2009). Certain types of treatments were associated with particular outcomes. For example, behavioral treatments were associated with better homework performance (Langberg et al., 2010). At the eight-year follow-up, the adolescents' current status was best predicted by their early symptom trajectories. That is, those "children with behavioral and sociodemographic advantage, with the best response to any treatment, will have the best long-term prognosis" (Molina et al., 2009, p. 484). Overall, however, the adolescents, in comparison with typically developing peers, continued to display significant impaisrments.

The original MTA cohort has now been followed into adulthood (with 82% retention for research participants), and we know more about the varied long-term outcomes of individuals diagnosed with ADHD in childhood (Erskine et al., 2016). For example, long-term outcomes for individuals whose core ADHD symptoms persisted into adulthood included more problems in domains such as occupational security, substance abuse, and co-occurring psychiatric disorders (Hechtman et al., 2016). Other longitudinal data, however, showed that early, effective treatment for ADHD was associated with long-term improvements for related difficulties such as negative emotionality (Fernandez et al., 2015). This type of research collaboration is expensive and difficult to coordinate. It is, however, absolutely necessary if we—researchers, clinicians, parents, teachers, and others—want to be able to describe and offer optimal care to individuals with ADHD.

treatments, and then combined treatments (Jensen et al., 2005). There is considerable variation in treatment strategies and implementation in countries around the world, depending in part on economic and sociocultural factors. Some countries, for example, display more antipsychiatry and antimedication attitudes; others are more likely to use a combination of treatments (Hinshaw et al., 2011). One necessary aspect of all treatments involves parent and child education, including information about medication and psychosocial interventions; available special educational services; and access to mental health resources such as parent support groups and individual counseling. Much of our current understanding of treatment has been enhanced by one of the most impressive and comprehensive longitudinal studies of the treatment of ADHD: the National Institute of Mental Health's Collaborative Multisite Multimodal Treatment Study of Children with ADHD, which combines rigorous experimental protocols with particular attention to individual differences (see Box 9:1).

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Pharmacological Treatment

In hundreds of studies with thousands of children, the use of central nervous system (CNS) stimulants, as well as newer nonstimulant medications to treat ADHD has received significant support (Campbell et al., 2014; Spencer, Biederman, & Wilens, 2016). This is why medication is often viewed as a first-line intervention. The majority of children who are treated with long-used medications such as methylphenidate (Ritalin) and newer types of long-acting stimulants (such as Adderall and Cylert) show real and substantive improvement, measured by parent–teacher ratings, direct observations, and performance in lab tasks. Worldwide use of methylphenidate varies widely and has significantly increased over several decades (see Figure 9:6). ADHD medications have been shown to work for girls as well as boys, for both white and black youth, and for youth from a variety of SES backgrounds, as well as for preschoolers, adolescents, and adults (Arnold et al., 2003; Ghuman, Arnold, & Anthony, 2008; Rieppi et al., 2002). A relatively recent trend in ADHD treatment is combined pharmacotherapy, using combinations of medications to treat the disorder. Explanations for this trend include the higher rates of comorbid psychopathologies, better symptom control, and the synergy of combined medications.

Positive effects of stimulant treatments are observed for relationships with parents, teachers, and peers, although parents and teachers report different patterns of benefits and side effects (Campbell et al., 2014; Spencer et al., 2016). Whether improvements are evaluated with respect to a reduction in symptoms or with respect to the "normalization" of a child's cognitive and behavioral performance remains a tricky issue (Karpenko, Owens, Evangelista, & Dodds, 2009). However, even with a variety of improvements, there are children who will continue to display higher-than-normal levels of inattention, activity, and impulsivity (Karpenko et al., 2009). Families' varied beliefs about medication use may provide clinicians with valuable information related to communication, decision making, and long-term responses to children's treatment (Krain, Kendall, & Power, 2005; Leslie, Plemmons, Monn, & Palinkas, 2007).

There are, however, a number of cautions. Improvements in ADHD symptoms last as long as medication continues and, in some cases, do not persist (Jensen et al., 2007; Sonuga-Barke & Halperin, 2010; Spencer et al., 2016). This lack of sustained improvement may reflect poor adherence and early termination related to medication use (Pappadopulos et al., 2009). Adherence and termination may be influenced by adverse effects (e.g., poor sleeping and poor appetite), as well as small decreases in growth rates (Sonuga-Barke, Coghill, Wigal, DeBacker, & Swanson, 2009; Swanson et al., 2007). Adolescents, in particular, display poor medication compliance (Costello & Maughan, 2015). In addition, critics of medication management hypothesized that children would attribute improvements, when they did occur, to the pills

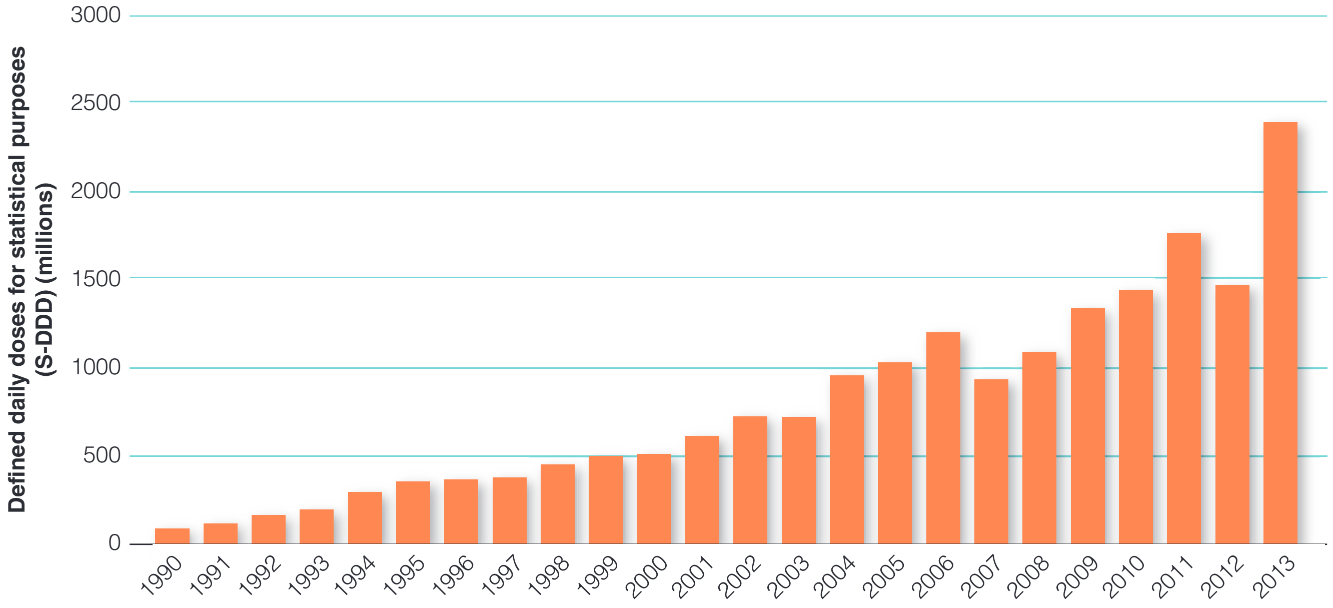

FIGURE 9:6 Worldwide consumption of methylpenidate, 1990–2013.

Source: International Narcotics Control Board (2015).

BOX 9:2

Clinical Perspectives

Medication and Children

Currently, approximately 8% of youth between 4 and 17 are diagnosed with ADHD, and 4.5% of youth both have an ADHD diagnosis and are using medication (Mayes, Bagwell, & Erkulwater, 2008). The upsurge in diagnosis and medication use is a result of “a confluence of *trends* (clinical, economic, educational, political), an alignment of *incentives* (among clinicians, educators, policymakers, health insurers, the pharmaceutical industry), and the sizable growth in scientific *knowledge* about ADHD and stimulants, all of which converged in the first half of the 1990s” (Mayes et al., 2008, p. 152; emphasis in original).

With rapidly rising rates of psychopharmacological interventions for very young children, school-aged children, adolescents, and adults, we must thoughtfully address various public health and ethical concerns. With respect to the youngest group, are actual disorders increasing in younger samples? Are our methods of detection and diagnosis improving, or are we confusing normal behavioral, emotional, and cognitive variations in preschoolers with deviant behavioral, emotional, and cognitive displays in older children and adolescents? What are the costs and benefits of using drugs that have not been investigated or approved for young children? And what are the societal, clinical, and personal meanings associated with the prescription of Ritalin, or any other psychotropic medication, to a very young child?

As we have repeatedly emphasized throughout this textbook, taking a developmental view of distress, dysfunction, and disorders provides us with valuable perspective. Children experience the “terrible twos,” the “often still thorny threes,” and the “formidable fours.” Some of their worrisome behaviors fade with time, and some continue. We must acknowledge that developmental bumps in the road are inevitable, and that there are no alternatives to patient, loving, and individualized caregiving. But we also acknowledge that psychopathology does occur in the early years.

We know that, for example, troubled preschoolers often present with a mix of clinical difficulties in many psychological domains. Whether a child is appropriately understood as anxious, depressed, learning disabled, or as having ADHD is difficult to determine. Parents are often desperate to find out exactly what is “wrong” with a child, and do something to “fix” that child as fully and as quickly as possible. It is a public policy shame that in many ways, mental health professionals cannot offer the kinds of educational services, family support, and nonmedical interventions that may be exactly what many families need. In addition, strong evidence exists that supports the importance of sequencing interventions. For example, in treating children with an ADHD diagnosis, adding medication after first initiating a behavioral intervention has been linked to better outcomes in both home and school settings (Pelham et al., 2015).

Of course, we must also consider the very small number of young children with well-defined ADHD that results in significant impairments; these children might be suitable candidates for what is clearly an effective intervention strategy in older children. Recent research shows, however, that once preschool children diagnosed with ADHD begin pharmacotherapy, they are likely to continue on stimulant medication, and in some cases, on other psychotropic medications as well (Vitiello et al., 2015). But even when medication might be appropriate, the ethics of medicating children remain (Singh, 2008). Safety concerns involve testing protocols that focus on older children, adolescents, and adults and whether the effects of medication on still-developing brain–behavior systems are well understood.

With increasing use of multiple medications (i.e., “polypharmacology”), concerns become even more compelling. Some have expressed reservations about threats to children’s autonomy and everyday experiences of childhood. But, according to Singh (2008), children with ADHD would choose to take medication, and “they successfully negotiate the stigma around drug treatment.” Further, “ADHD diagnosis and stimulant drug use have been shown to affect children’s concepts of identity and personal authenticity, but the available evidence suggests that these effects are largely positive for most children, at least until they reach adolescence” (Singh, 2008, p. 962). Adolescence also presents another opportunity for addressing clinical and ethical issues, as the abuse potential (mainly for youth who are *not* diagnosed with ADHD) becomes more relevant (Kollins, 2007).

rather than themselves or their efforts; this does not appear to be the case (Pelham et al., 2002). Finally, most researchers, clinicians, parents, and teachers believed that general academic improvements would follow any change for the better in specific ADHD symptoms. Contrary to hopeful hypotheses, however, it appears that the use of most ADHD medications alone results in little improvement in long-range academic achievement. Discussions related to the history and current use of medications for children and adolescents are ongoing (see Box 9:2).

Psychosocial Treatment

Although medications are clearly effective for many children, most parents prefer psychosocial interventions for their children (Campbell et al., 2014). Psychosocial interventions include **behavioral parent training**, cognitive-behavioral interventions for children, behaviorally oriented peer interventions, social skills training, and summer programs. Interventions that target emotion dysregulation are increasingly part of comprehensive treatment plans (Shaw et al., 2014). Positive effects are described for multiple domains, but amount, intensity, and generalization all need to be taken into account (Pelham & Fabiano, 2008). Positive outcomes are most often related to the amelioration of problems related to self, school, families, and peers rather than the core ADHD symptoms (Costello & Maughan, 2015). Although there are mixed results from studies of social skills training, such training may be particularly important given the data on negative developmental cascades related to peer dislike and peer rejection (Antshel & Barkley, 2008; Murray-Close et al., 2010). Even with improvements, however, children with ADHD often remain impaired in their peer relationships (Hoza et al., 2005). Overall, the data suggest that psychosocial treatments, like medications, may be usefully understood as a primary intervention.

A number of child factors that influence treatment efficacy and outcome have been investigated. Severity of ADHD symptoms, below-average IQ, and parent psychopathology all had a negative impact on treatment; ethnicity did not (Hinshaw, 2007; Jones et al., 2010). Better EF skills are associated with better treatment response (Costello & Maughan, 2015). Psychosocial interventions that are focused on the particular challenges of adolescents are increasingly implemented (e.g., Evans, Schultz, DeMars, & Davis, 2011). For girls and young women with persistent and severe ADHD, treatments must also address the potential for risk taking, self-harm, and suicidality (Guendelman, Owens, Galan, Gard, & Hinshaw, 2016; Swanson, Owens, & Hinshaw, 2014).

School Interventions

Most children with ADHD are placed in mainstream classes, but some may require individual tutoring and specialized plans to support academic achievement. Both the National Rehabilitation Act and the Individuals with Disabilities Education Act (IDEA) are legislative efforts requiring appropriate educational services for children with ADHD. Special accommodations such as having children with ADHD sit in a place with fewer distractions (e.g., in the front of the class, next to the teacher's desk), receiving written as well as oral instructions, and providing visual aids and reminders are common. The learning disabilities displayed by many children and adolescents with ADHD must also be addressed.

Among the most effective school-based interventions involve **behavior contingency management** in the classroom (Antshel & Barkley, 2008; Pelham & Fabiano, 2008). These interventions include reward programs, point systems, and time-outs for inappropriate behavior. They are designed to target multiple difficulties, including academic, behavioral, and social functioning (DuPaul, Helwig, & Slay, 2011). Participation, collaboration, and coordination among service providers, teachers, and parents are essential (Nadeem & Jensen, 2009). The Family–School Success model is one example of a successful intervention that combines psychosocial approaches across settings for improved child outcomes (Power et al., 2012).

Interventions with Adults

As previously noted, medications are effective in treating the symptoms of ADHD in adults. Improvements in occupational and marital functioning have also been observed with medication management (Castle, Aubert, Verbrugge, Khalid, & Epstein, 2007). With regard to ongoing relationship problems, workplace/career difficulties, and self-esteem issues, Nadeau (1998) suggests an increased therapeutic emphasis on life management skills. For example, Nadeau focuses on "thing management" (papers, personal objects), "time management," and "to do management" (lists of tasks), as well as money management. The provision of treatment and support across the lifespan is increasingly emphasized in ADHD interventions (Barkley, 2017b; Costello & Maughan, 2015).

Future Trends

New forms of treatment are also being discussed, with renewed emphasis on cognitive training interventions, complementary and alternative treatments (such as aerobics and mindfulness), and earlier interventions (Nigg, 2011). There are also efforts to design prevention protocols that target underlying causes, alter developmental trajectories, and improve outcomes (Sonuga-Barke & Halperin, 2010). Implementation of these protocols involves identifying risk profiles, differentiating children who require intervention from those who don't, and matching children with individualized treatments (e.g., medication, cognitive interventions, parenting programs) (Sonuga-Barke & Halperin, 2010). Other examples of such early intervention strategies include the development and training of attention and EF skills (Dougherty et al., 2015; Johnson, 2012; Johnson et al., 2015).

Key Terms

Attention deficit/hyperactivity disorder (ADHD) (p. 151)
Self-regulation (p. 152)
Effortful control (p. 152)
Executive function (p. 153)
Two-factor model of ADHD (p. 156)
Final common pathway (p. 160)
Polygenic model (p. 160)
Behavioral parent training (p. 168)
Behavior contingency management (p. 168)

Chapter Summary

- Attention deficit/hyperactivity disorder (ADHD) is characterized by a combination of the symptoms of impulsivity, restlessness, and inattentiveness.
- Self-regulation, effortful control, and executive functioning skills are important developmental milestones that are compromised by ADHD.
- The diagnosis of ADHD reflects compromised functioning in the domains of inattention, hyperactivity/impulsivity, or both.
- Boys receive diagnoses of ADHD four to five times more often than do girls.
- In general, ADHD is an exceptionally stable diagnosis over time.
- Rates of co-occurring internalizing and externalizing disorders increase for children with ADHD over time.
- Diagnoses most commonly occurring along with ADHD include oppositional defiant disorder, mood and anxiety disorders, and learning problems.
- Genetic and neurological factors are central to the development of ADHD, whereas psychosocial factors play an important role in the maintenance and exacerbation of the disorder.
- Extensive research into the cognitive deficits that tend to characterize ADHD points, in particular, to weaknesses in effortful control.
- Because the core symptoms of ADHD (e.g., distractibility and impulsivity) are present in many children, variable, and continuous with typical behavior, it is especially important that assessment include multiple data sources from multiple settings.
- The majority of children treated with stimulant medication show significant improvement.
- Although medication is especially helpful in the short-term, psychological interventions, such as behavioral parent training, and environmental interventions, such as classroom adaptations, are important for sustained improvement in functioning.

10 Oppositional Defiant Disorder and Conduct Disorder

CHAPTER OUTLINE

BOX 10:1 THE CHILD IN CONTEXT: Historical Perspectives on Bad Behavior

Developmental Tasks and Challenges Related to Prosocial Behavior

A Developmental Perspective on Bullying

Oppositional Defiant Disorder

The Case of Brynn

The Case of Liam

Conduct Disorder

The Case of Kyle

The Case of Elena

Developmental Course

Oppositional Defiant Disorder

Conduct Disorder

Developmental Cascade Models

Etiology

Genes and Heredity

Physiological Factors

Child Factors

Parent and Family Factors

Peer Factors

Sociocultural Factors

Assessment and Diagnosis

Intervention

Child Treatments

BOX 10:2 CLINICAL PERSPECTIVES: The Early Risers Program

Parent Treatments

Comprehensive, Peer, School, and Residential Programs

Prevention

FOUR-YEAR-OLD MARISSA yells at her mother when her mother reminds her to brush her teeth. Six-year-old Jonah sits in time-out for hours because he refuses to apologize for disrespectful behavior at the dinner table. For the third time in a week, 11-year-old Luis is sent to the principal's office, this time for ignoring his teacher's repeated requests for him to sit down and complete his math assignment.

Are these children headstrong, or spoiled, or bad? Are their parents and teachers too lenient or too harsh? Is anyone to blame in these battles for control? And why do some argumentative and disobedient children grow up into adolescents who lie, cheat, and steal? How do we explain adolescents who flout rules and exploit others? How can we comprehend the heartbreaking episodes of adolescent rage and violence that destroy families, schools, and communities? Understanding oppositional defiant disorder and conduct disorder involves thinking carefully and critically about "bad" behavior throughout history and the apparent increases in externalizing behaviors in recent decades (Collishaw, 2015; Collishaw, Maughan, Goodman, & Pickles, 2004; Robins, 1999; see Box 10:1). As we think about the various pathways toward and away from externalizing behaviors, it is essential that we continue to use a developmental framework; with such a framework, bridges among research, treatment, and public policy may be built.

BOX 10:1

The Child in Context

Historical Perspectives on Bad Behavior

Over the centuries, adults have sought to teach, control, and socialize children, and to respond appropriately to children's bad behaviors. Costello and Angold (2001) summarize multiple historical approaches to dealing with deviant behaviors and deviant children. Each of these perspectives has something to say about the nature of children and about the emergence of responsibility for one's own behaviors, the relations between the family and the larger social group with respect to control of children, and institutions for out-of-control individuals.

With respect to the nature of children, Costello and Angold (2001) describe approaches that focus on the children's behavior as the result of disease (e.g., genetic and hereditary explanations), disposition, motivation, lack of knowledge (e.g., malice-related or ignorance-related explanations), or problematic environments (e.g., distressed families or dysfunctional neighborhoods). Hostile, oppositional, defiant, and aggressive behavior is at times the sole responsibility of the child, sometimes the responsibility of the parents, and sometimes the responsibility of society. Blame and recriminations are pervasive.

In various eras, adults have alternately viewed children as similar to adults (judging them accordingly) and as different from adults (responding with leniency and mercy). And societies have struggled to balance their obligations to children and to the communities in which children live. Many societies have developed separate legal and physical systems for dealing with difficult children. The consequences of unacceptable behaviors have ranged from education and rehabilitation through punishment, ostracism, and isolation.

Other, more recent discussions of children's behavior have held out the possibility that some types of bad behavior may in fact be adaptive for some children. The benefits of bad behavior may be understood within an evolutionary context (Pinker, 2002) or within more circumscribed settings, including SES, ethnic background, and family environments (Underwood, 2003a, 2003b). The role of developmental level and the impact of specific developmental challenges remain to be fully explored. And whether we are concerned about girls or boys also influences our definitions of bad behavior, our expectations, and our responses to such behavior (Underwood, 2003a, 2003b; Underwood, Galen, & Paquette, 2001). As we grapple with our concerns, we need to remind ourselves that the questions we frame about children will need to be as complex, difficult, and genuine as they are.

Developmental Tasks and Challenges Related to Prosocial Behavior

Prosocial behaviors are behaviors that benefit others. Young children who are prosocial cooperate with their parents, share with their peers, and help in their communities. As children age, their prosocial repertoires expand in a variety of ways, involving achievements related to self-control and rule-based behavior. The development of prosocial behavior depends on individual, relationship, and environmental factors. This brief overview summarizes information about typical patterns of prosocial behavior and provides a framework for comparison and contrast for upcoming discussions of oppositional defiant disorder and conduct disorder.

The development of **conscience** is the key child factor underlying prosocial behavior. According to Kochanska and Aksan (2006, p. 1587), the child's conscience is the "inner guiding system responsible for the gradual emergence and maintenance of self-regulation." The construct of conscience includes both moral emotions (guilt, discomfort following transgressions) and moral conduct (behavior compatible with rules and standards). While early forms of moral emotions and moral conduct are observed in young children, mature forms develop over a lifetime (Frimer & Walker, 2009; Hardy & Carlo, 2011; Kohlberg, 1994).

Kochanska and Aksan (2006, p. 1587) describe the early form of conscience as the "child's eager, willing stance toward parental socialization," and they identify two components of temperament, fearfulness and effortful control, that influence that stance. In related temperament–conscience research, Stifter, Cipriano, Conway, and Kelleher (2008) report that inhibited (more reactive, more fearful) children exhibited more prosocial behavior than exuberant and less highly aroused children. The exuberant and less highly aroused children appeared less responsive to the discomfort associated with violating rules.

Children's ongoing emotional, cognitive, and behavioral development also contributes to the development of conscience. With respect to emotion, experiences of empathy underlie prosocial behavior. With respect to cognition, better perspective-taking abilities lead to increases in prosocial behavior. With respect to behavior, improved self-regulation influences cooperation and compliance. Taken together over time, a prosocial orientation—a "moral self"—can help organize a child's pattern of thinking, feeling, and behaving (Eggum et al., 2011; Kochanska, Koenig, Barry, Kim, & Yoon, 2010; Paulus, 2014).

Of course, children do not develop prosocial orientations on their own. In the early years of childhood, the quality of the parent–child relationship and parental discipline style are important influences on children's prosociality (Paulus, 2014; Spinrad et al., 2012). A recent study of positive parenting in eight countries identified reciprocal interactions between positive parenting and children's prosocial behavior, and provided evidence for "a universal influence of child prosocial behavior on the affective climate of the family" (Pastorelli et al., 2015, p. 831). Other research on prosociality emphasizes the *parent–child mutually responsive orientation (MRO)* (Kochanska, Barry, Aksan, & Boldt, 2008). With MRO, "parents and children become responsive to each other, smoothing the way for successful parental socialization efforts" (Kochanska et al., 2008, p. 1225). This responsiveness toward parents is enduring and generalized, consistently associated with children's internalization of parental values, and evident in rule-based behavior. According to Kochanska et al. (2010), responsiveness is the link between the parent's behaviors and the child's conscience and prosocial behavior.

There are a number of studies that illustrate interactions between child factors and parent factors. Cornell and Frick (2007) observed that, for uninhibited children, inconsistent discipline was associated with lower levels of guilt and empathy. Inhibited children displayed more guilt and empathy irrespective of parenting behavior. In other research, effortful control predicted the development of conscience for inhibited children, whereas parental socialization predicted the development of conscience for exuberant children (Stifter et al., 2008). Differential sensitivity models related to parenting and child compliance have also been proposed, with some children (depending on genetic factors) showing greater reactivity to both supportive and unsupportive environments (Sulik et al., 2011).

As noted, prosociality develops throughout childhood and adolescence. And the parent–child relationship that supports (or hinders) prosociality also changes over time. Relationships in general, and close relationships in particular, are characterized by dimensions of permanence, power, and gender (Laursen & Bukowski, 1997). Permanence has to do with the stability of the relationship. Parent–child and sibling relationships are among the most enduring, although there are certainly individual differences in the degree of closeness in family relationships. Power has to do with control and responsibility. Parents and children provide a good example of a *vertical relationship*, where parents are typically invested with most of the power. Sibling and peer relationships tend to be *horizontal*, characterized by more egalitarian roles and shared control and responsibility. Gender plays an important role in almost all relationships; understanding the differential impact of mothers and fathers, and same-sex and opposite-sex peers, on boys' and girls' experiences across childhood and adolescence is essential.

Less hierarchical relationships are observed in adolescence, and adolescents increasingly influence their relationships with their parents (Laursen & Collins, 2009; McGue, Elkins, Walden, & Iacono, 2005). Conflicts increase, and the topics of parent–adolescent conflicts differ by age and gender (Renk, Liljequist, Simpson, & Phares, 2005). For example, younger adolescents are more likely to argue about separation–individuation issues, rules and responsibilities, and school issues; older adolescents are more likely to argue over peer group issues. Conflicts appear similar across ethnicity and culture (Daddis & Smetana, 2005; Smetana & Gettman, 2006; Yau & Smetana, 2003). Some of these conflicts seem superficial, but in fact may be "proxies for arguments over more serious issues such as substance use, automobile driving safety, and sex" (Arnett, 1999, p. 320). Levels of warmth and supportiveness may also change in ways that may be particularly problematic for some adolescents. For instance, Hafen and Laursen (2009) note that struggling adolescents often report that they experience less support from their parents. Even after considering changes related to conflict and warmth, however, most adolescents and parents report continuing positive relationships (Arnett, 1999; McGue et al., 2005).

Patterns of prosocial behavior across childhood and adolescence increasingly involve peer-related behaviors, and bidirectional influences on prosociality are frequently described (see Figure 10:1). Although overlapping somewhat with relationships with parents, relationships with peers offer unique experiences. Citing Piaget's and Kohlberg's theories, Parker, Rubin, Price, and DeRosier (1995) provide the example of moral development as a domain wherein what you learn from

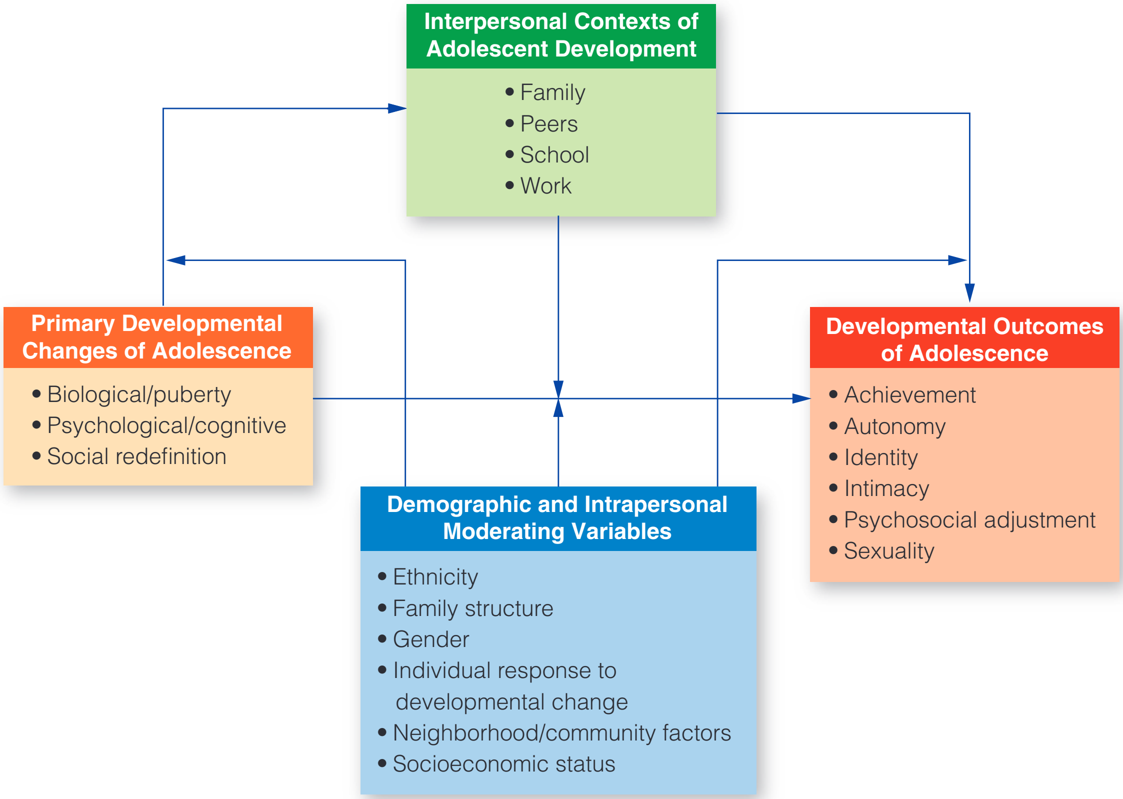
Interpersonal Contexts of Adolescent Development
• Family
• Peers
• School
• Work
Primary Developmental Changes of Adolescence
• Biological/puberty
• Psychological/cognitive
• Social redefinition
Developmental Outcomes of Adolescence
• Achievement
• Autonomy
• Identity
• Intimacy
• Psychosocial adjustment
• Sexuality
Demographic and Intrapersonal Moderating Variables
• Ethnicity
• Family structure
• Gender
• Individual response to developmental change
• Neighborhood/community factors
• Socioeconomic status

FIGURE 10:1 Adolescent development in interpersonal context.

Source: P. C. Kendall, J. N. Butcher, & G. N. Holmbeck (1999). *Handbook of research methods in clinical psychology,* Copyright © 1999 John Wiley & Sons, Inc. Reproduced by permission of John Wiley & Sons, Inc.

peers can be very different from what you learn from parents and other adults.

Positive peer relationships reflect a critical developmental achievement, with both individual and social consequences (Rose & Rudolph, 2006). Some of the most important aspects of adolescent life involve the density and diversity of social networks. Over the years of childhood and early adolescence, the availability of peers increases with, for instance, entrance into larger schools and involvement in sports, clubs, extracurricular lessons, and community activities. Over the school years, “the peer group also becomes increasingly segregated by sex, and to a lesser extent, race, and organized into more discernable hierarchies of power and popularity” (Parker et al., 1995, p. 101). Across adolescence, we see some loosening of cliques and clique behavior and a shift to peer subcultures. These are larger groups of “similarly stereotyped individuals” that include “jocks, brains, loners, rogues, druggies, populars, and nerds” (Parker et al., 1995, p. 104). Other investigators have examined adolescent groups and friendships using different methods, measures, and classifications. Coie, Dodge, and Coppotelli (1982) described four extreme status groups of children, based on peer nominations. The *popular* children were those who received lots of positive responses and few negative ones. The *rejected* children received many negative responses and few positives. The *neglected* children received few positive or negative responses. And the *controversial* children had both positive and negative responses. Although 60% to 65% of children were classified as average (i.e., not in any of the extreme groups), the results from many studies suggest that the extreme classifications are relatively stable. Keep in mind, however, that there are important differences among acceptance, popularity, and friendships, as well as differences between objective and subjective indices of peer relationships (Parker et al., 1995). The reality observed by others does not always match the reality felt by an adolescent.

In addition to understanding the availability and classifications of peer relationships, the nature and continuity of relationships must be addressed (Poulin & Chan, 2010). School transitions from elementary to middle school or middle school to high school can disrupt

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Peer group relationships become an increasingly important influence on moral and behavioral development during adolescence.

long-standing friendships (Parker et al., 1995). Indeed, "different environments present different challenges to individuals. For example, the maintenance of friendships may be less difficult in the well-structured environments of elementary school than in the expansive environments of secondary schools" (Laursen & Bukowski, 1997, pp. 748–749). These changes can be almost as upsetting to parents, who may for the first time not know their children's friends, as it is to young adolescents themselves. Related to the nature of adolescent relationships, the positive qualities (e.g., intimacy, loyalty, trust) appear more important than the quantity of friendships, especially for boys (Demir & Urberg, 2004). And positive experiences in one type of relationship, such as with friends, may buffer negative experiences in others, such as with parents (and vice versa) (Laursen & Bukowski, 1997).

Understanding the impact of gender on healthy and unhealthy peer relationships is critical (Rose & Rudolph, 2006; Underwood, 2004a), and the ways in which adolescent boys and girls conceptualize and manage negative emotion and various forms of aggression provide relevant developmental information. Both boys and girls exhibit physical and nonphysical aggression, but the frequency and intensity of aggression differ; for both boys and girls, individual differences also need to be taken into account (Card, Stucky, Sawalani, & Little, 2008; Zimmer-Gembeck, Geiger, & Crick, 2005). Relational (or social) aggression is thought to be more common in girls and is focused on harm caused in relationships. Examples include exclusion, gossip, and friendship manipulation (e.g., exploiting one's friends or having friends lie to parents or teachers) (Crick & Grotpeter, 1995; Underwood, 2004b). A recent meta-analysis of nearly 150 studies, however, suggests that the gender difference may be relatively trivial (Card et al., 2008). Physical aggression is more typical of boys and, like relational aggression, needs to be understood in the broader context of emotional development.

A Developmental Perspective on Bullying

Across the world, parents, teachers, mental health professionals, and public health advocates are increasingly focused on the phenomenon of **bullying** and the sometimes tragic consequences for bullied children and adolescents. A developmental perspective is especially useful for understanding the prevalence, origins, and outcomes of bullying and victimization and allows informed discussion of prevention, treatment, and public policy. Definitions of bullying emphasize negative actions intended to hurt or harm (e.g., fighting, harassing, excluding) that are repeated over time and that involve a power differential between the bully and the victim (Volk, Dane, & Marini, 2014). Cyberbullying is an increasingly problematic form of bullying (Modecki, Minchin, Harbaugh, Guerra, & Runions, 2014). Some bullying behaviors (e.g., nasty teasing) have more typical developmental counterparts (e.g., friendly teasing).

Bullying is a globally pervasive problem in families, schools, and neighborhoods. In schools, bullying is observed at all grade levels, including kindergarten (Pepler, Jiang, Craig, & Connolly, 2008; Troop-Gordon, 2015), with the roots of some forms of bullying interactions observed even earlier in development (Godleski, Kamper, Ostrov, Hart, & Blakely-McClure, 2015; Troy & Sroufe, 1987). Both boys and girls bully, and both boys and girls are victims. Cross-country estimates of the prevalence of bullying vary widely, from 10% to 50%, with cross-country differences noted in adult sensitivities to different forms of bullying (Smorti, Menesini, & Smith, 2003). Rates are highest in the middle school years: for boys in eighth grade, and for girls in ninth grade. Specific forms of bullying change over time, with more aggression related to emerging sexuality and sexual identity in middle school and high school (Pepler et al., 2006). Cyberbullying is less prevalent than traditional bullying, although they are highly correlated (Modecki et al., 2014). Overall, bullying decreases from childhood to adolescence (Cillessen & Lansu, 2015; Monks et al., 2009).

Bullies are a heterogeneous group of children and adolescents. Researchers have identified a number of factors that are associated with being a bully. Both poor social skills (being an "oaf") (Crick & Dodge, 1994) and well-developed social skills (the Machiavellian view) (Sutton, Smith, & Swettenham, 1999) have been described (Arsenio & Lemerise, 2001). Other research has focused on deficits in empathy and in the internalization of values (van Noorden, Haselager, Cillessen, & Bukowski, 2015). Increased risk for bullying is also associated with child maltreatment, lack of parent monitoring (relevant for both bullies and victims) and parent hostility, domestic violence, and hostile neighborhood interactions (Bowes et al., 2009). School factors such as teacher attitudes, degree of supervision, school ethos, and school policies are also important (Monks et al., 2009). The motivations for bullying are also complex and include status, psychological gratification, and material rewards. Various trajectories are possible, including high levels of bullying over time and decreasing levels over time (Pepler et al., 2008). Whereas some bullies desist, others go on to display other forms of antisocial behavior and conduct disorder; still others go on to display a variety of adult psychopathology and adult forms of bullying, such as sexual and workplace harassment and violent relationships (Copeland, Wolke, & Costello, 2013; Pepler et al., 2006).

Victims, too, are a mixed group. Factors associated with increased risk include minority status, low peer status, low socioeconomic status (SES), being gay or lesbian, or having special needs or a psychological disorder. A vicious cycle has been described, with some of the immediate consequences of bullying (e.g., withdrawn and internalizing behaviors) leading to further victimization (Biggs et al., 2010). Individual reputations as victims are stable (in peers), but there is significant variability in self-perception (Biggs et al., 2010). Poor outcomes include short- and long-term consequences

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Bullying behavior, including threatening and harassing more vulnerable classmates, is increasingly recognized as a serious problem requiring school- and community-based prevention and intervention.

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related to psychological, physical, and social adjustment (Troop-Gordon, Rudolph, Sugimura, & Little, 2015). One of the most poignant involves suicidality, which is related to social hopelessness (Bonanno & Hymel, 2010).

Antibullying programs have been adopted in most states in the United States. The U.S. Department of Education has listed 16 components of legislation and ranks states' laws and policies accordingly. However, antibullying programs are only associated with modestly positive outcomes and, too often, not enough meaningful impact; there is an urgent need for better research (Merrell, Gueldner, Ross, & Isava, 2008; Ryan & Smith, 2009). The research to date suggests that both universal and individual (victim-oriented) interventions are necessary, targeting schools, families, and communities (Biggs et al., 2010; Bowes et al., 2009). Adult support (from both parents and teachers) is critical (Conners-Burrow et al., 2009; Troop-Gordon, 2015). Well-timed interventions (e.g., at late elementary school, before the transition to larger schools) are also important.

Oppositional Defiant Disorder

Oppositional defiant disorder (ODD) is a sustained pattern of anger, irritability, and defiant or vindictive behavior. The disorder is differentiated from the more severe conduct disorder, which involves the violation of social norms and rules as well as the rights of others. The following two cases illustrate common ODD presentations.

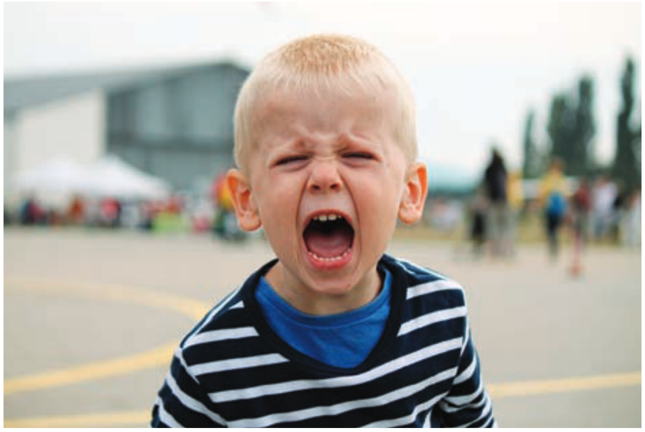
The Case of Brynn

Brynn is a six-year-old child who exhibits noncompliance, frequent temper tantrums, and physical aggression at home and at school. These aggressive behaviors include throwing objects, biting, punching, and kicking. Her mother, a single parent, reported that Brynn's difficulties began at age 3 and emerged during a period of multiple life changes, including moving to a new home and enrolling in a different school. Because of the disruptive behaviors, she was asked to leave several day care centers before starting kindergarten. In addition to being frustrated with Brynn, Brynn's mother is also upset with herself because she has no idea how to handle Brynn's increasingly loud and obnoxious interactions with her and with her siblings at home and in public. She is also concerned that, despite Brynn's enjoyment of all things related to nature and interest in science, Brynn's disrespectful attitude and behaviors in school will lead to teachers labeling her a troublemaker, and to peers rejecting her on the playground and in the neighborhood. ■

The Case of Liam

Liam is an 11-year-old referred for a diagnostic assessment by his mother and father because of his "horrible" behavior and school difficulties. Liam is in sixth grade. His parents describe him as disrespectful, disobedient, and spiteful. At times, they are taken aback by his loud and threatening behavior, especially when it is directed at his younger brother. Grounding Liam and withholding money and other privileges has had little impact, even though there are times when he seems distressed by his own actions. Liam has been suspended twice this school year for disruptive behavior, including yelling at a teacher. His few close friends are increasingly frustrated with his mean-spirited teasing and his blaming them for some recent classroom misbehavior. Academically, Liam is struggling to keep his grades high enough to pass, although he had little trouble in school prior to this year. ■

Both Brynn and Liam exhibit mixes of typical and atypical behaviors that require closer study. Developmentally, Brynn displays disruptive behaviors that are more frequent and more intense than expected; indeed, her repeated dismissals from day care settings suggest clinically significant disturbance. Liam displays externalizing behaviors that complicate his personal agenda and ruin family activities. For both Brynn and Liam,



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Negativistic, hostile, and defiant behaviors are the core features of oppositional defiant disorder.

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TABLE 10:1 Oppositional Defiant Disorder: Summary of DSM-5 Diagnostic Criteria

A. Pattern of angry/irritable mood, argumentative/defiant behavior, or vindictiveness lasting at least six months; four or more symptoms from list below, exhibited during interactions with individuals other than siblings.

Angry/Irritable Mood

1. Often loses temper
2. Often easily annoyed
3. Often angry and resentful

Argumentative/Defiant Behavior

1. Often argues with authority figures
2. Often defies or refuses to comply with requests from authority figures or rules
3. Often blames others for his or her mistakes or misbehavior
4. Often blames others for his or her mistakes or misbehavior

Vindictiveness

1. Spiteful or vindictive at least twice within the past six months

B. The disturbance in behavior is associated with distress in the individual or others or impairment

the transition to new school situations that require additional self-control also seems more problematic than for most of their peers. Both Brynn and Liam meet the diagnostic criteria for oppositional defiant disorder (see Table 10:1).

Early descriptions of oppositional defiant disorder mainly focused on its role as an early or milder expression of conduct disorder. Researchers and clinicians have since come to conceptualize ODD as a distinct entity associated with significant impairment (Bierman & Sasser, 2014; Burke, Waldman, & Lahey, 2010). Stringaris and Goodman (2009) identify three dimensions of oppositionality in children: irritability, being headstrong, and being hurtful. According to the researchers, each dimension is associated with different developmental pathways, different etiologies, and differentially focused treatments.

In related research, Wakschlag, Tolan, and Leventhal (2010) described four dimensions that underlie oppositional defiant disorder, emphasizing that problematic behaviors need to be distinguished from typical misbehavior in children. The dimensions in the Wakschlag et al. model are as follows:

- Aggression, the "tendency to respond aggressively including multiple forms, triggers, and targets" (p. 6). Normative aggression is common, but not frequent; a predictable developmental pathway is observed (i.e., increasing in the second year, decreasing across the preschool period). Stable or increasing aggression is nonnormative. Reactive (compared to proactive) aggression is more common.
- Noncompliance is the "resistance to, and failure to comply with, directives, rules, and social norms" (p. 7). Noncompliance is present in two-year olds and then increases across preschool years, reflecting age-appropriate expressions of independence. As children get older, with advances in cognition and better language skills, there are changes in the forms and skillfulness of noncompliant behaviors (e.g., verbal negotiation instead of direct noncompliance). An important distinction is that assertiveness is more typical than defiance. Also important is the degree to which the child is able to modulate the noncompliant response.
- Temper loss involves "problems in regulation of anger, including intensity, frequency, and modulation" (p. 8). The most studied form of temper loss is tantrums. The key differences in typical versus atypical tantrums relate to the intensity of tantrums, the destructiveness of tantrums, and the difficulty in recovering from tantrums. Although the overall frequency of tantrums decreases significantly over the preschool years, destructive tantrums, when present, increase in frequency between three and five years of age and are strongly associated with later clinical disorder (Egger, 2011).
- Low concern for others is a "disregard of others' needs and feelings ranging from mild insensitivity to more active and pervasive disregard as well as efforts to cause distress" (p. 10). Low concern, or a lack of empathy, can be understood as a deviation from typical conscience development [think back to the descriptions of moral emotions and moral conduct (Kochanska & Aksan, 2006) summarized in the opening section of this chapter].

Oppositional defiant disorder has been documented in many different cultures and countries (Robins, 1999). Estimates of prevalence in community samples vary from 2% to 16% (Maughan, Rowe, Messer, Goodman, & Meltzer, 2004; Nock, Kazdin, Hiripi, & Kessler, 2007). Estimates of prevalence in clinical samples of children are much higher, between 28% and 65% (Loeber, Burke, & Pardini, 2009). Some suggest that the diagnostic criteria seriously under-identify the number of children with ODD who experience significant impairments (Burke et al., 2010). Almost all investigations of ODD report that it is more common in boys, but there is increasing work on descriptions of disruptive disorders in girls. Oppositional defiant disorder is frequently discussed in tandem with conduct disorder, and there is notable overlap in risk factors, etiology, and clinical presentation (Burke et al., 2010; Loeber, Burke, & Pardini, 2009; Rowe, Costello, Angold, Copeland, & Maughan, 2010).

Conduct Disorder

The Case of Kyle

Kyle is a 14-year-old referred for evaluation by his mother and school principal due to concerns about escalating behavior problems, school difficulties, and suspected substance abuse. He gets in trouble at school nearly every week: sometimes for disobeying school rules, sometimes for rude comments to teachers, and occasionally for fighting with other students. Recently, Kyle was suspended for stealing a cell phone and money from another student's locker. He was also suspended last year, when he punched and kicked a younger student who accidentally ran into him in the hallway. Although Kyle is not involved in any school teams or organizations and most other students avoid him, he does have a small group of friends who have also been in considerable trouble. Some of them have been arrested for property-related criminal behavior.

Kyle's problems at school are compounded by defiant, reactive, and disruptive behavior at home, dating all the way back to his preschool years. When younger, Kyle was hard to manage at home and at school, and by middle school, his parents felt that they had very little control over him. Now, his parents tend to steer clear of him and are grateful for the occasional periods of uneasy truces. ■

The Case of Elena

Elena is a 15-year-old referred for evaluation at the suggestion of her pediatrician. She is in the tenth grade and currently failing most of her classes. She skips school several times a week and hangs out with a group of older teens who have dropped out of high school. Elena has been stealing money from her parents and has also been arrested twice for shoplifting. She has recently come home intoxicated, and her parents have found drug paraphernalia in her room.

This is not how life has always been for Elena. Elena's parents report a relatively uneventful childhood. They began to be concerned about her, however, during eighth grade. At the time, Elena dropped out of sports and her grades fell dramatically. Eventually, Elena was diagnosed with depression, participated briefly in therapy, and began taking an antidepressant. Although her mood and behavior improved somewhat, she continued to struggle throughout the year. After a period of social isolation, she began to hang out with a group of girls who prided themselves on their alienation from mainstream school and family experiences. ■

Conduct disorder (CD) involves a persistent pattern of very problematic behavior in which there are serious violations of social norms and rules. As described in DSM-5 (see Table 10:2), these violations include aggression or mistreatment directed toward people or animals, property destruction, deceitfulness

TABLE 10:2 Conduct Disorder: Summary of DSM-5 Diagnostic Criteria

A. Repetitive and persistent pattern of behavior in which the rights of other or age-appropriate societal norms or rules are violated as manifested by at least three of the following:

Aggression to People and Animals

1. Often bullies, threatens, or intimidates others
2. Often initiates physical fights
3. Has used a weapon that can cause serious physical harm to others
4. Has been physically cruel to people
5. Has been physically cruel to animals
6. Has stolen while confronting victim
7. Has forced someone into sexual activity

Destruction of Property

1. Has deliberatively engaged in fire setting
2. Often lies to obtain goods or favors or to avoid obligations

Deceitfulness or Theft

1. Has broken into someone else's house, building, or car
2. Often lies to obtain goods or favors or to avoid obligations
3. Has stolen items of nontrivial value without confronting victim

Serious Violations of Rules

1. Often stays out at night despite parental prohibitions
2. Has run away from home overnight at least twice
3. Is often truant from school, before age 13 years

B. Disturbance in behavior causes clinically significant impairment in social, academic, or occupational functioning

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or theft, and other serious rule violations. In addition to these behavioral criteria, children and adolescents who receive a diagnosis of conduct disorder are evaluated with respect to **callous–unemotional characteristics**. These characteristics include lack of empathy, lack of guilt or remorse, shallow emotions, and a lack of concern about performance (Frick & Moffitt, 2010).

There are two subtypes of conduct disorder: **child-onset subtype** and **adolescent-onset subtype**. With childhood onset, the individual diagnosed with conduct disorder has a long history of negative personal and interpersonal behaviors, and the behaviors deteriorate over time. With onset in adolescence, the individual's problem behavior emerges more abruptly. Adolescent-onset conduct disorder is much more common than child-onset (Bierman & Sasser, 2014). For child-onset CD, boys outnumber girls 10 to 1; for adolescent-onset CD, boys outnumber girls 5 to 1 (Moffitt & Caspi, 2001). The diagnosis is more common in youth from lower-SES backgrounds (Bierman & Sasser, 2014). Ethnicity also appears to influence prevalence rates (Hishinuma et al., 2005). It is important to note that many youth do not fall neatly into either the early-onset or late-onset category. For many, CD unfolds over time, with some of the disruptive behaviors appearing early and others appearing later (Bierman & Sasser, 2014). Other conceptualizations of subtypes emphasize the presence or absence of severe aggression, learning or cognitive problems, and/or peer rejection and victimization (Bierman & Sasser, 2014).

Child-onset and adolescent-onset conduct disorder differ not only in their timing, but also in their symptom patterns, severity, and outcomes. Moffitt's (2003; Moffitt et al., 2008) theory of CD describes a **life-course persistent (LCP) trajectory**, similar to child-onset CD; and an **adolescence-limited (AL) trajectory**. The AL form of CD is somewhat less problematic over time than the child-onset form, although there is still evidence of significant impairment in daily functioning and risk for poor outcomes. LCP individuals are more likely to have a history of ODD and a family history of antisocial behavior and are more likely to display aggression and have worse outcomes than AL individuals. As noted in prevalence data, more boys exhibit the early onset, more severe CD pathway. Given recent increases in the diagnosis of girls, negative consequences such as early pregnancy and later antisocial behavior, and the fact that much of our CD data is based on samples of boys, we will need to look more carefully at girls' trajectories of disruptive and externalizing behaviors (Keenan, Stouthamer-Loeber, & Loeber, 2005; van der Molen et al., 2015).

Because aggression is common in both typical and atypical development, it makes sense to step back and carefully consider the forms and functions of aggression (Dishion, 2014; Hawley & Vaughn, 2003; Robins, 1995) and the ways in which aggression predicts later antisocial outcomes (Burt, Donnellan, Iacono, & McGue, 2011; Dishion, 2014). **Aggression** involves behaviors that are carried out with an immediate goal of causing harm to another. Many investigators have attempted to understand why aggression occurs and what it involves. **Instrumental aggression** is aggression that is premeditated or planned. In most cases, instrumental aggression is a means to a particular end. A bully who plans to wreck another child's science project exhibits instrumental aggression. **Reactive aggression** is aggression that occurs in response to a provocation. It is more angry and impulsive. A child who is thrown out at first base displays reactive aggression by cursing at the umpire. Although this instrumental–reactive distinction is useful in many ways, it is important to remember that aggression often has multiple motives and multiple goals; these include attempts to reestablish self-esteem or public image, attempts to express grievances, or attempts to obtain benefits such as money or information.

The *whats* of aggression have to do with whether aggression is overt or covert (Card et al., 2008). **Overt aggression** (also called *direct aggression*) involves harmful physical behaviors or overt behaviors such as name-calling. Overt aggression is more often associated with low levels of prosocial behavior, emotional dysregulation, externalizing problems, and poor peer relationships. **Covert aggression** (also called *indirect aggression*) may include the externalizing behaviors observed in CD, such as property damage or theft; it may also involve behaviors that harm the target by rejection or exclusion (Crick's "relational aggression") or alternative strategies (such as manipulation) employed when the costs of overt aggression are high. Covert aggression is associated with higher levels of prosocial behavior and internalizing problems.

In addition to ongoing theoretical and empirical work focused on aggression, recent research has emphasized the need to better understand the callous–unemotional construct in order to "attempt to identify a group of conduct-disordered youth who are at greatest risk for developing severe and persistent forms of antisocial behavior" (Loeber et al., 2009, p. 136). Callous–unemotional (CU) characteristics include, as noted previously, shallow affect, a lack of empathy, guilt, and/or remorse, and a failure to accept responsibility for antisocial acts.

In combination with interpersonal features such as manipulativeness, deceitfulness, superficial charm, and grandiosity, this early form of psychopathy is linked to a number of deleterious outcomes (Bierman & Sasser, 2014; Dishion, 2014; Frick & Moffitt, 2010). Recent work on girls with conduct disorders, for example, suggests that girls with CU traits display more serious aggression and more global impairment than conduct-disordered girls without these traits (Pardini, Stepp, Hipwell, Stouthamer-Loeber, & Loeber, 2012).

Patrick, Fowles, and Krueger (2009) describe a three-part, developmentally informed conceptualization of psychopathy. The first component is disinhibition, involving a propensity toward impulse-control problems, a lack of planfulness, an insistence on immediate gratification, and deficient behavioral restraint; disinhibition is "at the nexus of impulsivity and negative affectivity" (Patrick et al., 2009, p. 925). The second component is boldness, involving the capacity to remain calm in stressful situations, high self-assurance and social efficacy, and a tolerance for danger. The third component is meanness, with deficient empathy, a disdain for others, exploitativeness, and empowerment (see Figure 10:2). Overall, the research on callous–unemotional characteristics and psychopathy suggests that it will be necessary to make explicit the developmental connections among ODD, CD, and antisocial personality disorder (Bierman & Sasser, 2014; Dishion, 2014; Frick & Moffitt, 2010).

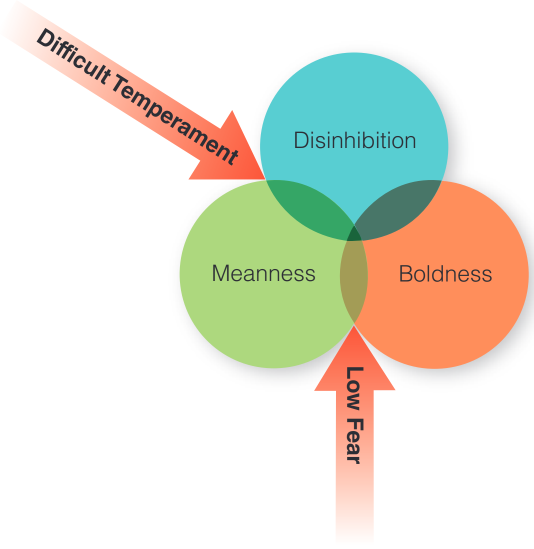

FIGURE 10:2 A presentation of hypothesized relations among constructs of disinhibition, boldness, and meanness (circles) and influences of difficult temperament and low fear (arrows) on each construct.

Source: From C. J. Patrick, D. C. Fowles, & R. F. Krueger (2009). Triarchic conceptualization of psychopathology: Developmental origins of disinhibition, boldness, and meanness. *Development and Psychopathology, 21,* 913–938.

Developmental Course

There are several predictable pathways for children with early externalizing disorders. For oppositional defiant disorder, it is important to keep in mind the continuous nature of oppositional and disruptive behaviors (i.e., the connections between typically and atypically developing children) (Wakschlag et al., 2010). However, early patterns of disruptive difficulties are frequently and strongly associated with later patterns of difficulties, and children with clinically significant disorders do not grow out of their problems (Burke, Waldman, & Lahey, 2010; Caspi et al., 2003). For conduct disorder, the historical framework for understanding developmental pathways is provided by Lee Robins's (1966) classic book, *Deviant Children Grown Up*. Robins documented the potential stability of conduct disorder, finding that many troubled children and adolescents display antisocial personalities, along with other types of psychopathologies, as adults. However, he also observed the possibility of positive change and better outcomes in some individuals. Robins's findings have been replicated many, many times in other longitudinal studies; the stability of conduct-disordered behavior, especially related to aggression and callous–unemotional characteristics, is abundantly clear across individuals and across generations.

Oppositional Defiant Disorder

With respect to oppositional defiant disorder, one developmental pathway is for ODD to continue without much improvement or deterioration, resulting in years of conflict, hostility, and disappointment. Without intervention, this pathway is the most common. One factor that contributes to stability is age of onset. Early onset is associated with persistent patterns of difficulty (Lorber, Del Vecchio, & Slep, 2015; Wakschlag et al., 2014). Severity of symptoms is another factor to consider. For both girls and boys, the more severe the ODD symptoms, the more stable the disorder (Bierman & Sasser, 2014). Displays of atypical aggression in early childhood may be a particularly important marker of later dysfunction (Brennan, Shaw, Dishion, & Wilson, 2015).

Gender also plays an important role. Beginning in preschool, boys exhibit more disruptive behaviors with more negative impact. In the Great Smoky Mountains Study, boys diagnosed with ODD displayed worse outcomes involving externalizing disorders, although girls later developed more internalizing disorders (Rowe et al., 2002). Combinations of other factors, such as early temperamental difficulties, poor self-regulation, certain forms of aggression, low SES, and a diagnosis of attention deficit hyperactivity disorder (ADHD) also appear to influence gender-specific pathways (Loeber, Capaldi, & Costello, 2013; Owens & Hinshaw, 2016; van der Molen et al., 2015).

Parent, family, and peer factors influence the ways in which ODD plays out over time. Adult patience and tolerance for oppositional behavior varies widely; similar child misbehaviors may evoke very different responses in different individuals (Bierman & Sasser, 2014). Compared to most parents' experiences of managing extremes of oppositional, coercive, and defiant behavior for discrete periods of time, for parents of children with ODD, the prospect of chronic conflict may be overwhelming (Dishion, 2014; Williford, Calkins, & Keane, 2007). Negative parenting, involving either hostility and harsh discipline or timid discipline, is associated with poorer outcomes (Burke, Pardini, & Loeber, 2008). Conversely, parental warmth, coupled with active monitoring of children's activities, is associated with better outcomes (Vanderbilt-Adriance et al., 2015).

The case of Brynn provides several examples of the influence of parents and parenting on the course of ODD. Brynn's mother recalls how many times she has felt embarrassed over the last year as Brynn has misbehaved loudly in the grocery store, the discount store, and the entrance lobby of his school. She is positive that other parents believe that she is either unfit or stupid, and these concerns have led her to withdraw from many of her regular social activities. Her parents have tried to help with babysitting and financial support, but they have also repeatedly criticized her for not being strict enough with Brynn. At this point, Brynn's mother is discouraged and ready to give up on Brynn to focus on her other children.

Another common pathway for children with ODD is progression to conduct disorder (Bierman & Sasser, 2014; Burke et al., 2010). A diagnosis of ODD is a stronger predictor of CD for boys (Rowe et al., 2010), and lower SES and higher levels of parent hostility also increase the risk of a later diagnosis of CD (Bierman & Sasser, 2014; Loeber et al., 2009). In longitudinal research, ODD is identified as "a pivotal developmental disorder," especially in boys (Burke, Loeber, Lahey, & Rathouz, 2005). This is because ODD is not only linked to later externalizing disorders, but also to later internalizing problems such as anxiety and depression (Loeber et al., 2009; Wertz et al., 2015).

The combination of oppositional defiant disorder and attention deficit hyperactivity disorder is of special concern. Lahey, Loeber, and their colleagues have proposed a model of externalizing disorders in which only those children who are diagnosed with *both* ODD and ADHD go on to develop conduct disorders, with ADHD often preceding ODD as a specific risk factor (Burke et al., 2005; Lahey et al., 2004; Lahey & Loeber, 1997). In this model, there are three deviant pathways, each with its own set of developmental challenges (although these may overlap): (a) the **overt pathway**, with minor aggression leading to more serious aggression that tends to be unconcealed and blatant; (b) the **covert pathway**, with minor misbehaviors leading to more serious delinquent acts that tend to be more concealed or secretive; and (c) the **authority conflict pathway**, with stubborn relationship-oriented behaviors leading to more serious disobedience and hostility. Trajectories specific to delinquency have been presented: one involving arrests occurring before age 13 and progressing to serious and chronic adult criminal behavior, and the other involving later arrests and less frequent adult crime (Bierman & Sasser, 2014; Dishion, 2014).

One of the most problematic pathways is from oppositional defiant disorder to conduct disorder to antisocial personality disorder, with increases in aggression, violence, and substance abuse along the way (Dishion, 2014). Aggression, in particular, exhibits very stable trajectories. However, it is important to emphasize that with age, fewer and fewer individuals are diagnosed with the increasingly severe and persistent disorders.

The **coercion model** described by Gerald Patterson and his colleagues is a developmental model that provides a framework for understanding the emergence, maintenance, and treatment of oppositional defiant disorder. In this model, often referred to as the *Oregon model* (named for the state in which much of the research was conducted), the primary focus is on social interaction learning and patterns of parental characteristics that lead to negative parent–child interactions. Chamberlain and Patterson (1995), Patterson, Forgatch, and DeGarmo (2010), and Dishion (2014) describe these characteristics in detail: (1) inconsistent discipline, with parents only sometimes enforcing limits and rules; (2) irritable, explosive discipline, with parents enforcing limits and rules in harsh and angry ways; (3) inflexible, rigid discipline, with parents enforcing limits and rules without regard to individual child attributes or special circumstances; and/or (4) low supervision and involvement.

The basic assumption of the coercion model is that parents and children struggle for control over a number of everyday tasks and activities, and that maladaptive parenting leads to children's externalizing behavior. The coercion model specifically examines a conditioning sequence in which children are inadvertently reinforced for their problematic behaviors (Patterson, Reid, & Eddy, 2002). If parents are ineffective and rigid, children's initial misbehavior and disobedience (which may be typical and not always a major concern) escalates. The child's escalating opposition is met by the parent's increasingly punitive responses, again and again and again. Over time, children's externalizing behaviors generalize to other settings. In school settings, for example, oppositional behavior leads to struggles with teachers and increased risk for academic failure. In peer settings, the child's negative behaviors lead to rejection by their typically developing, more prosocial peers. This rejection leads to increased association with other deviant peers and increasingly antisocial behavior.

Conduct Disorder

Estimates of the stability of conduct disorder over time range between 44% and 88% (Loeber et al., 2009). With respect to adolescent-onset conduct disorder, Moffitt (2003) and Frick and Viding (2009) suggest that for many, the externalizing problems reflect a "misguided attempt to obtain a subjective sense of maturity and adult status in a way that is maladaptive (e.g., breaking societal norms) but encouraged by an antisocial peer group. Given that their behavior is viewed as an exaggeration of a process specific to adolescence, and not because of an enduring vulnerability, their antisocial behavior is less likely to persist beyond adolescence" (Frick & Viding, 2009, p. 1114). For most adolescents with CD, this is a time-bound (albeit difficult and upsetting) phase characterized by impairment in most domains of functioning. For others, this is the beginning of an ongoing or deteriorating pathway involving other psychopathologies such as substance abuse and other negative outcomes such as school dropout (Bierman & Sasser, 2014; Loeber et al., 2009).

With respect to child-onset CD, stable externalizing trajectories are already evident in the early school years (Bierman & Sasser, 2014; Lahey & Waldman, 2003). In addition, researchers have reported that the externalizing behaviors exhibited by boys on the life-course path do not change over time; rather, their repertoire of disruptive behaviors expands to include new overt and covert problem behaviors (Dishion, 2014; Lahey, Loeber, Burke, & Applegate, 2005).

In comparisons of conduct-disordered youth with callous–unemotional characteristics and conduct-disordered youth without those characteristics, those with CU characteristics exhibit particularly severe and violent patterns over time (Byrd, Loeber, & Pardini, 2012; Frick & Viding, 2009; McMahon, Witkiewitz, Kotler, & The Conduct Problems Research Group, 2010). Youth without CU traits display higher levels of anxiety and appear distressed by the effects of their problematic behaviors.

Family and peer factors also contribute to deteriorating (or improving) pathways. Family instability and conflict are associated with children's worsening externalizing behaviors (Burt, McGue, Krueger, & Iacono, 2005; Milan, Pinderhughes, & The Conduct Problems Prevention Research Group, 2006). Parents of conduct-disordered youth appear to become disengaged over time, with less monitoring of their children's behaviors and activities (Dishion, 2014; Hafen & Laursen, 2009). The breakdown in family management leads some adolescents to associate more frequently with deviant peers, and this leads to an increase in the severity and variety of CD behaviors (Bierman & Sasser, 2014). Groups of deviant peers experience more negative emotion and exhibit more support for rule breaking and aggression (Dishion, 2014; Snyder et al., 2008). The greatest increases in problem behaviors are seen in adolescents who are rejected by most peers and whose deviant peer group displays higher levels of delinquency (Dishion, 2014; Laursen, Hafen, Kerr, & Stattin, 2012). Sexual activity, sexually transmitted diseases, and unplanned pregnancies are primary health concerns for adolescent girls with CD (van der Molen et al., 2015). Internalizing disorders such as depression are also commonly observed (Capaldi & Kim, 2014; Wertz et al., 2015).

Developmental Cascade Models

Recent conceptualizations of developmental pathways focused on conduct disorder and antisocial behavior have emphasized the multiple underlying patterns and pathways of CD. With child-onset CD, for example, research has suggested the following: a difficult and vulnerable child experiences inadequate or dysfunctional parenting that leads to disruptions in conscience development and socialization. Poor socialization leads to problematic relationships in and out of the home and negative impacts on a variety of psychological and social domains (Frick & Viding, 2009). Other research on **developmental cascade models** (summarized in

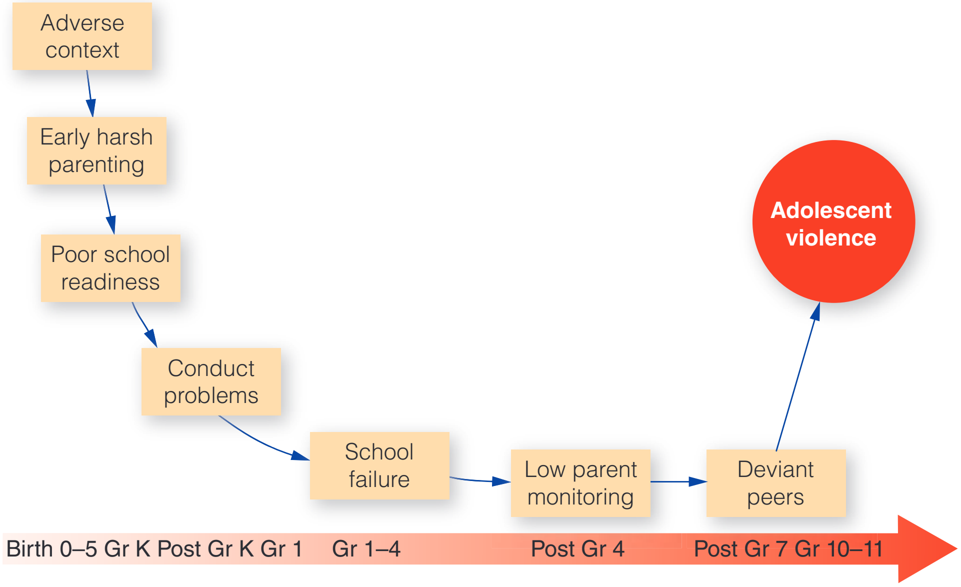

FIGURE 10:3 A developmental cascade model of violent behavior.

Source: K. A. Dodge, M. T. Greenberg, P. S. Malone, & The Conduct Problems Prevention Research Group (2008). *Testing an idealized dynamic cascade model of the development of serious violence in adolescence.* Copyright 2008 Child Development. Reproduced with permission of John Wiley & Sons Inc.

Chapter 3) has emphasized the cross-domain, spreading effects observed over time in children with externalizing behaviors (Bierman & Sasser, 2014; Dishion, 2014). In these studies, researchers have documented that difficulties with social information processing, peer rejection, and aggression “compound and exacerbate one another” (Lansford, Malone, Dodge, Pettit, & Bates, 2010) and that antisocial behavior and poor peer relations become “entangled” over time, with cascading effects from externalizing to internalizing problems over time (van Lier & Koot, 2010). In a detailed model of the development of violent behavior, Dodge, Greenberg, Malone, and The Conduct Problems Prevention Research Group (2008) described the progression from an adverse early environment to harsh parenting, to poor school readiness, to conduct problems, to school failure, to poor parent supervision, to deviant peer relationships, to adolescent violence (see Figure 10:3), with each successive risk building and expanding on previous risk and poor adjustment.

Etiology

Developmental cascade models highlight the multiple factors that contribute to the emergence of oppositional defiant disorder and conduct disorder. In order to explain the diversity of clinical presentations, etiological models must take into account genetics and physiology, child factors, family factors, peer factors, and school and other sociocultural factors.

Genes and Heredity

With respect to the role of genetic factors, the picture is complicated, with evidence for genetic, shared, and nonshared environmental influences on oppositional defiant disorder, conduct disorder, and antisocial behavior. Researchers have repeatedly observed that externalizing disorders aggregate in families; the often-overlapping clinical presentations of ODD with ADHD and CD suggest the possibility of shared genetic risks (Baskin-Sommers, 2016; Bierman & Sasser, 2014). There are also differences related to the timing (i.e., during childhood or during the pubertal transition) of genetic effects on antisocial behavior (Harden & Mann, 2015; Van Hulle et al., 2009).

Much of the research on genes and heredity is focused on specific characteristics that are part of the clinical presentation of ODD and CD. For example, there are ample data on the heritability of prosociality, negative emotionality, and daring (Waldman et al., 2011); inhibitory control (Gagne & Saudino, 2010); disinhibition, boldness, and meanness (Patrick et al., 2009; Young et al., 2009); and callous–unemotional and psychopathic personality characteristics (Bezdjian, Tuvblad, Raine, & Baker, 2011; Frick & Viding, 2009). As discussed in other chapters, current research is often focused on models of vulnerability and differential sensitivity, with strong data that gene-by-environment interactions are essential to understanding the development of externalizing disorders over time (Burt, 2015; Harden & Mann, 2015).

Physiological Factors

Brain imaging studies have reported both structural and functional impairments (Davidson, 2000; Frick & Viding, 2009). Individual differences in brain areas and processes include those related to frontal lobe activation, the amygdala, the hypothalamic-pituitary-adrenal (HPA) axis, the behavioral inhibition system, and the workings of neurotransmitters and hormones (such as testosterone). Biological mechanisms that underlie sex differences in conduct disorder have also been investigated (Eme, 2007). Multiple physiological systems contribute to risk, including "(1) low levels of physiological arousal that are associated with irritability and sensation seeking (2) blunted sensitivity to negative consequences (e.g., fearlessness) that may reduce the effectiveness of socialization, and (3) hyperreactivity to threat that is associated with emotion dysregulation and anger" (Bierman & Sasser, 2014, p. 474). Consistent with the developmental cascade model previously described, "young children with low levels of physiological arousal may initiate frequent impulsive, willful, and risky behaviors, and may be relatively unresponsive to punishment, challenging caregivers to set limits effectively, thus contributing to the initiation of family conflict in early childhood and to ongoing rebellion against teachers and adult authority in later childhood and adolescence" (Bierman & Sasser, 2014, p. 472).

Child Factors

Child factors that have an impact on the development of oppositional defiant disorder, conduct disorder, and antisocial behavior include neuropsychological factors, emotion factors, cognitive factors, and temperament and personality factors. Among the most common findings are that children diagnosed with ODD or CD exhibit deficits in the processing of negative emotional stimuli (e.g., they do not respond in typical ways to others' fear and distress) (Frick & Viding, 2009; van Goozen, 2015; Zaki & Cikara, 2015) and differences in sensitivity to reward and punishment (Fairchild et al., 2009). In addition to these types of neuropsychological deficits, high negative emotionality and poor emotion regulation are risk factors (Calkins & Keane, 2009; Cole, Hall, & Radzioch, 2009). Another emotion factor that has been largely overlooked is anxiety. New hypotheses that connect anxiety and disruptive behavior are the focus of ongoing research (Granic, 2014).

Increased risk is also associated with a number of cognitive factors. These include lower overall intelligence, language deficits, and poor executive functions (Barker, E. D. et al., 2011; Pajer et al., 2008; Woltering, Lishak, Hodgson, Granic, & Zelazo, 2015). The often comorbid diagnosis of ADHD, however, makes executive function deficits difficult to tie specifically to ODD and/or CD (Crick & Dodge, 1994, 1996). One comparison of impaired decision making between ADHD and conduct disorder contrasts the inefficient, inconsistent, and impulsive decision making observed in children and adolescents with ADHD and the reckless, insensitive to negative outcomes decision making observed in children and adolescents with CD (Sonuga-Barke et al., 2016).

As noted in the earlier section on bullying, we need to take into account cognitive factors that reflect impairment, as well as cognitive factors that are associated with an ability to exploit the social environment. Most research to date has focused on deficits in social information processing and **impaired social cognition**, with less accurate and more hostile/aggressive interpretations of everyday social information (Card, 2011; Crick & Dodge, 1994). Other research, consistent with recent efforts to understand callous–unemotional traits, emphasizes that some children and adolescents "perceive their social worlds quite accurately, and use that knowledge to their personal advantage" (Arsenio & Lemerise, 2001, p. 60).

Behavior-related risks involve impulsivity and deficits in the domain of effortful control. The negative consequences of impulsivity are heightened by the presence of characteristics such as being daring (i.e., the enjoyment of exciting, risky, and possibly dangerous activities) (Bierman & Sasser, 2014; Dishion, 2014). Problems with effortful control appear especially important for boys (Karreman, van Tuijl, van Aken, & Dekovic, 2009) and for less guilt-prone children (Kochanska, Barry, Jimenez, Hollatz, & Woodard, 2009). Coupled with high negative emotionality or angry rumination, self-control becomes even more important (Denson, DeWall, & Finkel, 2012). Overall, these are youth with fewer coping skills and resources.

Temperament and personality factors are also associated with increased risk. Investigators have identified a combination of emotionality and high activity levels as potentially problematic (Stringaris, Maughan, & Goodman, 2010; White et al., 2012); others have argued that "the temperamental deficits in different aspects of emotional reactivity could make it more difficult for a child to develop appropriate levels of guilt, empathy, and other dimensions of conscience" (Frick & Viding, 2009, p. 1117).

The personality characteristic receiving the most theoretical and empirical attention is the callous–unemotional construct. Callous–unemotional traits are associated with significant stability over time and more severe and more aggressive conduct disorder (Bierman &

Sasser, 2014; Dishion, 2014; Kroneman, Hipwell, Loeber, Koot, & Pardini, 2011). Related to callousness is the personality construct of psychopathy (Lynam et al., 2005; Salekin, Leistico, Trobst, Schrum, & Lochman, 2005). Several dimensions of psychopathy have been observed in adolescents: the callous–unemotional trait, impulsivity, and narcissism (Pauletti, Menon, Tobin, & Perry, 2012), with different studies suggesting various relations among psychopathy, conduct disorder, and typically developing personality (Bierman & Sasser, 2014; Dishion, 2014; Lynam et al., 2005).

Another individual characteristic associated with externalizing problems is early puberty (Dishion, 2014). Adolescents who experience early puberty and *premature autonomy* in the context of harsh parenting and in an at-risk neighborhood are more likely to exhibit conduct problems (Burt, McGue, DeMarte, Krueger, & Iacono, 2006; Dishion, 2014). The impact of gender has been repeatedly discussed in connection with oppositional defiant disorder and conduct disorder. Boys are overrepresented in conduct-disordered populations for a variety of reasons, including lower levels of prosociality, higher levels of impulsivity, and genetic influences on the timing of puberty (Cross, Copping, & Campbell, 2011).

Parent and Family Factors

Parent and family factors include parent characteristics (e.g., genetic background, personality, and psychopathology), parenting attitudes and practices, and relationship variables. The direct and indirect impact of parents on the development of most instances of early and later externalizing disorders cannot be overestimated. Keeping in mind that genetic and environmental factors exert ongoing influences on children, adolescents, and relationships (Burt, 2015), we can begin to think carefully about the continuity of antisocial behavior, aggression, and conduct problems across multiple generations (Smith & Farrington, 2004) and the "double whammy" of high-risk genes and high-risk environments (Jaffee, Caspi, Moffitt, & Taylor, 2004, p. 109).

Depression in either mothers or fathers increases the risk for conduct disorder (Dishion, 2014; Kim-Cohen, Moffitt, Taylor, Pawlby, & Caspi, 2005). Antisocial personality disorder (ASPD) and/or substance abuse in fathers are frequently cited risks (Frick & Loney, 2002). Depression in mothers coupled with ASPD in fathers presents another high-risk combination (Marmorstein & Iacono, 2004). Parental psychopathology has both direct (e.g., genetic) and indirect effects (e.g., marital conflict, family dysfunction and instability, and poor parenting) that affect child and adolescent adjustment (Baskin-Sommers, 2016; Jester et al., 2005). Some children and adolescents appear to be even more harmed than others by marital and family conflict and chaos (Burt, 2015; Klahr, McGue, Iacono, & Burt, 2011).

Parenting practices such as harsh and coercive punishments have also been identified as causal factors (Bierman & Sasser, 2014). Data on physical punishment suggest that the association between physical punishment and child aggression is somewhat moderated by cultural norms, but even so, more frequent, more intense physical punishments are tied to both aggression and anxiety (Lansford, Wager, Bates, Dodge, & Pettit, 2012). The kinds of negative parenting described in the coercive model emphasize the frequent coercive practices, infrequent positive parenting, and rigid, noncontingent environments that at-risk children experience. Indeed, Patterson et al. (2010, p. 957) assert that there is "a direct path from antisocial parent to antisocial child behavior; this path was fully mediated by ineffective parenting practices." Neglectful or indulgent parenting has also been associated with externalizing problems (Steinberg, Blatt-Eisengart, & Cauffman, 2006). These forms of negative parenting, including lack of warmth and regard, have been observed throughout the child's early and later years and are similar for children of varied ethnic groups (Campbell, Shaw, & Gilliom, 2000; Caspi et al., 2004; Kim et al., 2003).

David Young-Wolff /Getty Images

Lack of parental monitoring is one contributor to adolescent conduct problems.

Parental permissiveness and poor monitoring of adolescents and their activities have received growing theoretical and research attention (Brody, 2003; Burke et al., 2008; Dishion & Bullock, 2002), with links observed between lack of monitoring and conduct disorder (Laird, Pettit, Dodge, & Bates, 2003). Conversely, parental involvement has been identified as a protective factor, as has religiosity (Pearce, Jones, Schwab-Stone, & Ruchkin, 2003). Appropriate monitoring may be especially important in problematic, high-risk neighborhoods (Beyers, Bates, Pettit, & Dodge, 2003; Bierman & Sasser, 2014). Differences in parenting practices related to ethnicity have also been correlated with CD (Lansford, Deater-Deckard, Dodge, Bates, & Pettit, 2004). Finally, the community context of parenting is a key variable in the emergence or prevention of CD (Broidy et al., 2003; Pinderhughes, Nix, Foster, Jones, & The Conduct Problems Prevention Research Group, 2001).

Interactions between child characteristics (such as gender or temperament) and parent characteristics may also contribute to the emergence of disruptive and conduct-disordered behavior. For example, sons and daughters who display challenging behaviors may elicit differentially effective discipline from parents (Burke et al., 2003; Burt, Krueger, McGue, & Iacono, 2003; Keiley, Lofthouse, Bates, Dodge, & Pettit, 2003). In another example, the experience of marital conflict may be especially problematic for children high on physiological reactivity (El-Sheikh et al., 2009). And, as noted earlier in the chapter, several investigations have explored the bidirectional influences of parenting and the development of conscience. According to Frick and Viding (2009), uninhibited preschoolers display well-developing conscience if they experience consistent discipline. In contrast, the "underarousal exhibited by fearless children may require parents to incorporate stronger methods of socialization that bring arousal levels into an optimal range for the child to internalize parental norms for prosocial behavior" (p. 1116). This approach is consistent with Blair's (1997, 2005) work on moral socialization. However, parental use of power assertion needs to be understood in the context of parent–child relationships. For instance, children with insecure attachments respond with resentment and oppositional behavior to coercive parenting; this resentment may itself predict externalizing behavior (Kochanska, Barry, Stellern, & O'Bleness, 2009). It is also important to keep in mind that there are some data suggesting that the impact of child behaviors on parenting may be greater than the impact of parenting on child behaviors (Burke et al., 2008).

Peer Factors

Peers and peer relationships have a notable impact on both the development and the later improvement or deterioration of oppositional defiant disorder, conduct disorder, and antisocial behavior (Bierman & Sasser, 2014; Dishion, 2014). Various forms of peer difficulties need to be considered, including difficulty forming and keeping relationships, aggression and bullying, and peer rejection. Related to the emergence of psychopathology, some common factors underlie many types of peer difficulties. For example, deficits in social cognition are likely to negatively influence relationships; these deficits are observed in children and adolescents who misinterpret others' social intentions, who display more incompetent problem solving during peer conflicts, or who are inaccurate in predicting the outcomes of their own negative behaviors.

Laursen, Hafen, Rubin, Booth-LaForce, and Rose-Krasnor (2010) describe the distinctive difficulties of disagreeable youth (who are different from aggressive, victimized, and withdrawn youth). Disagreeable youth display an inability to get along with others, because they are high in negative emotions, stubborn, self-centered, and argumentative. Stated directly, "the rude and the obnoxious make poor friends" (Laursen et al., 2010, p. 96). As expected, disagreeableness is associated with poor individual and interpersonal adjustment.

Peer dislike, rejection, and victimization often begin early and are a key predictor of later problems (Bierman & Sasser, 2014; Dishion, 2014). One of the most negative consequences of peer rejection is that rejected children and adolescents associate with other rejected children and adolescents. Deviant groups emerge, and pathways to conduct disorder evolve. Coercion and deviancy training are two processes that explain deteriorating pathways (Dishion, 2014; Snyder et al., 2008); these are examples of **peer contagion** (see Figure 10:4). There may be important gender differences. Both antisocial boys and girls experience rejection by peers, but boys end up associating with more deviant peers with somewhat different developmental outcomes (Bierman & Sasser, 2014; Van Lier, Vitaro, Wanner, Vuijk, & Crijnen, 2005). Friendships with deviant peers do not substitute for friendships with typically developing adolescents. The quality of the relationships is different, and being part of a delinquent group exacerbates one's own delinquent tendencies. Indeed, research suggests that the most important factor influencing the development of aggression and violence is "the tendency to self-organize into deviant peer groups" (Dishion, 2014, p. 456).

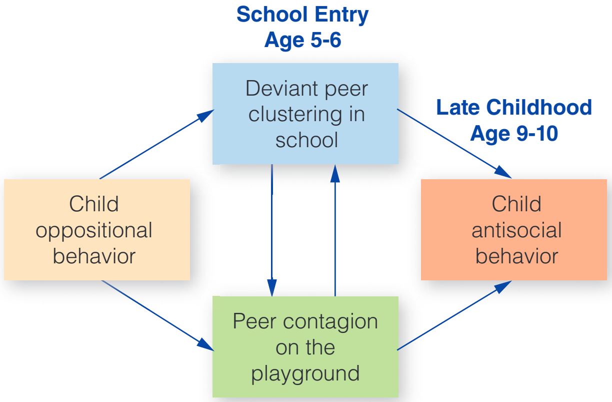
School Entry
Age 5-6
Deviant peer clustering in school
Late Childhood
Age 9-10
Child oppositional behavior
Child antisocial behavior
Peer contagion on the playground

FIGURE 10:4 Peer contagion helps explain the progression from oppositional behavior to antisocial behavior.

Source: T. Dishion (2014). A developmental model of aggression and violence. In M. Lewis & K. D. Rudolph (Eds.), Handbook of Developmental Psychopathology (p. 455). New York: Springer.

Violent behavior and gang activity are further steps on a worsening trajectory. Gang association and gang membership are related to aggression, conduct problems, drug-related activity, and violent crime; this is a powerful social influence to understand and address (Dishion, 2014; Lahey & Waldman, 2003).

Sociocultural Factors

Many studies of larger environmental variables such as ethnicity, SES, and neighborhoods provide context to current conceptualizations of ODD and CD. For example, once SES and neighborhood factors (such as neighborhood disadvantage) are accounted for, there is little or no influence of race or ethnicity (Burke et al., 2003; Goodnight et al., 2011). SES is inversely related to CD, even though the majority of youth from financially disadvantaged backgrounds do not exhibit disorders (Dishion & Sasser, 2014; Lahey & Waldman, 2003). Combinations of risk factors dramatically increase the likelihood of CD. Hypotheses exploring the social learning of conduct disorder emphasize the transactions among pervasive poverty, high-crime neighborhoods, poor parenting, delinquent peer groups, and lack of economic resources (Burt, Klump, Gorman-Smith, & Neiderhiser, 2016; Chung & Steinberg, 2006). Others have noted, however, the increased risk for disruptive and externalizing problems in youth from affluent backgrounds (Luthar et al., 2013). For some adolescents, neighborhood cohesion buffers the effects of poor parenting (Silk, Sessa, Sheffield Morris, Steinberg, & Avenevoli, 2004). Schools also play a role, either facilitating or working to prevent peer aggression and antisocial behavior (Dishion, 2014). Examining gene-by-environment interactions provides a last source of data on the etiology of ODD and CD, with an emphasis on the increasing importance of both genes and environments in adolescence (Burt, 2015).

Assessment and Diagnosis

Patterns of externalizing behavior are usually observed more quickly than are patterns of internalizing behavior (Delligatti, Akin-Little, & Little, 2003). Given the impairments associated with ODD and CD and the effects of disruptive and externalizing behaviors on families, teachers, peers, neighborhoods, and society, it is imperative to identify early and identify correctly. Indeed, early screening in kindergarten, with ratings made by parents and teachers, can identify children at risk; this makes early prevention efforts possible (Jones et al., 2002; Wakschlag et al., 2014). Before ODD or CD is diagnosed, careful distinctions need to be made between more common and developmentally expected problems and more severe psychopathology (Wakschlag et al., 2015; Willoughby, Chalmers, & Busseri, 2004). Multiple instruments and evidence-based assessments, including observations, parent and teacher ratings, self-reports, and lab tests, are essential (Collett, Ohan, & Myers, 2003; Malone, 2000; McMahon & Frick, 2005).

Parents, teachers, and children provide data in a variety of ways and for a variety of purposes. Correlations among these different informants are sometimes low, but each contributes information that helps illustrate the clinical picture (Owens & Hoza, 2003; Youngstrom, Loeber, & Stouthamer-Loeber, 2000). Taking note of the different settings in which symptoms are displayed—at home or school, in the clinic, or in the community—is also necessary (Bierman & Sasser, 2014; Gadow & Nolan, 2002). Parent reports must sometimes be interpreted cautiously, but parental perspectives on functioning in the home and on especially problematic behaviors such as aggression can be very useful. Teacher ratings are also important and are sometimes better predictors of degree of impairment (Flanagan et al., 2003; Mattison, Gadow, Sprafkin, & Nolan, 2002).

Children and adolescents themselves should also be routinely included in the assessment process. Self-reporting by children and adolescents about behavioral difficulties seems an unlikely source of good data.

However, young children and adolescents provide useful information (Arseneault, Kim-Cohen, Taylor, Caspi, & Moffitt, 2005; Hartung, McCarthy, Milich, & Martin, 2005). Keep in mind that even though most adolescents do not refer themselves for treatment, many with difficulties, particularly peer difficulties, do want help (Asher & Paquette, 2003).

The most salient issues related to differential diagnosis focus on distinctions among CD, ODD, and ADHD. It is possible to differentiate CD from each of these other disorders, but clinicians must understand that ODD, CD, and ADHD may co-occur, with appropriately separate diagnoses (Beauchaine, Hinshaw, & Pang, 2010; Burt et al., 2003). CD may also be comorbid with either anxiety or depression (Boylan, Vaillancourt, Boyle, & Szatmari, 2007; Loeber et al., 2009). Questioning about depression is especially important because the combination of CD and depression involves much higher risk for substance abuse and suicidality; girls are more likely to display this combination (Capaldi & Kim, 2014; Wertz et al., 2015).

Intervention

Because oppositional defiant disorder, conduct disorder, and antisocial behavior are so disturbing to adults and so debilitating for children and adolescents, there has been significant work focused on prevention and treatment for many years (Bierman & Sasser, 2014; Eyberg, Nelson, & Boggs, 2008; Reid, Patterson, & Snyder, 2003). Given the preceding sections, it may seem as if poor outcomes for struggling youth are inevitable. But Dodge et al. (2008, p. 1922) insist otherwise, stating that "it is premature to conclude that an early-starting antisocial 5-year-old is unequivocally destined for a life-persistent path toward violent outcomes. Although the risk is substantial, it is by no means certain. Trajectories can be deflected at each subsequent era in development, through interactions with peers, schools, and parents along the way." There are compelling data that well-timed, individualized, and comprehensive interventions for externalizing disorders are both successful and cost effective (Bierman & Sasser, 2014; Dishion, 2014; Frick & Viding, 2009). Comprehensive interventions such as the Incredible Years program, the Fast Track model, and the Early Risers program include several components and take into account both child-treatment compatibility and adult-treatment compatibility (Bierman & Sasser, 2014; Sorensen, Dodge, & The Conduct Problems Prevention Research Group, 2016; Webster-Stratton & Herman, 2010; also see Box 10:2). Interventions are most likely to be useful when there is a reasonable match between the clinical presentation and various treatment components. Examples of such matches include children's social skills deficits paired with cognitive-behavioral techniques, poor parenting skills paired with parent training and support, and damaged parent–child relationships paired with family therapy.

Child Treatments

Given the difficulties observed in children and adolescents struggling with externalizing disorders, it is not surprising that willingness to participate in treatment must be addressed. Adolescents especially may be reluctant to become engaged in psychotherapy (Cicchetti & Rogosch, 2002; Weisz & Hawley, 2002). It is essential, then, to quickly address the motivation for change and personal responsibility for change. For example, in designing treatments, clinicians may want to allow an adolescent some responsibility for goal setting, and decisions about discipline and rule breaking (Dishion, 2014; DeRoma, Lassiter, & Davis, 2004). These efforts may foster motivation, attendance, and treatment adherence (Nock & Kazdin, 2005). In addition, a strong therapeutic alliance must be established that includes the child and/or adolescent as well as his or her parents; the roles and responsibilities of all participants must be clear (Kazdin, Marciano, & Whitley, 2005).

Child treatment targets emotional, cognitive, and behavioral difficulties. Specific cognitive-behavioral interventions address deficits in the child's information-processing and problem-solving repertoires, including executive function impairments, problematic peer relationships, and difficulties at home. Greene et al.'s (2004) collaborative problem solving and Kazdin's (2005) problem-solving skills training are examples of effective cognitive-behavioral treatments. Problem-solving skills training involves a focus on cognitive skills such as interpreting normal peer behavior as less threatening (Thomas, 2006) and social skills such as learning scripts for how to join a group of peers already interacting (DeRosier & Marcus, 2005). The Stop Now and Plan (SNAP) Program also emphasizes cognitive behavioral strategies, with separate groups for boys and girls (Koegl, Farrington, Augimeri, & Day, 2008). The goals of all of these programs involve improving social competency and enhancing prosociality. Developing and supporting new relationships with prosocial peers is also important (Frick & Viding, 2009). Understanding the impact of neurological dysfunction on

BOX 10:2

Clinical Perspectives

The Early Risers Program

The Early Risers program, originally developed at the University of Minnesota and now implemented in communities across the country, is a multicomponent, high-intensity intervention program that targets aggressive elementary school children at risk for developing significant conduct problems (August, Lee, Bloomquist, Realmuto, & Hektner, 2004; Bernat, August, Hektner, & Bloomquist, 2007). This innovative program is based on the premise that early, comprehensive intervention, sustained over time and across settings, can change the developmental pathway for at-risk children from one characterized by destructive and maladaptive behavior to one characterized by resilience and success. The intervention includes social skills training; tutoring in reading and math; behavioral group therapy for aggressive, disruptive, and noncompliant behavior; and parent support services, including consultation and brief intervention for acute family problems. Sessions are based in schools or community centers and emphasize communication, consistency, and coordination of the intervention approach throughout the child's environment (school, community, and home). The enhanced sense of general competence that the children develop in the program has been shown to improve their self-image, decision-making, and problem-solving skills. Outcomes for individuals completing five years of continuous intervention show sustained improvement (Bernat et al., 2007). As more recent data reflecting 10-year follow-up studies emerge, the trend toward positive and sustained outcomes is clear. The value of early training of at-risk children in social skills and parents in effective discipline is that it appears to prevent or minimize the developmental cascades that would otherwise lead to externalizing behavior problems in the later teen years (Hektner, August, Bloomquist, Lee, and Klimes-Dougan, 2014).

Barriers to effective treatment and positive outcomes include poor collaboration between agencies and schools, transportation difficulties, and high staff turnover; these factors must be accounted for and addressed in the planning and treatment stages (August, Bloomquist, Lee, Realmuto, & Hektner, 2006). Predictors of more effective implementation of the Early Risers program include the use of Web-based technologies to monitor adherence to the treatment protocol (Lee et al., 2008) and specific clinician characteristics such as confidence in the program, conscientiousness, and flexible coping skills (Klimes-Dougan et al., 2009). In addition, successful wide-scale implementation is clearly enhanced by including comprehensive implementation support, such as school-based family advocates, in the design and implementation of the Early Risers program (Bloomquist, August, Lee, Lee, Realmuto, and Klimes-Dougan, 2013). The Early Risers program is included in the U.S. Department of Health and Human Services list of effective, evidence-based interventions for disruptive behavior disorders.

adolescent problem-solving abilities may enhance cognitively based treatment outcomes (Coolidge, DenBoer, & Segal, 2004).

For young children with temperamental vulnerabilities, these risks can be offset by either the development of emotion regulation skills or emotional aspects of conscience. Matching child temperament and parenting style to therapeutically exploit individual differences may be key to reducing negative outcomes (Bierman & Sasser, 2014; Frick & Morris, 2004). Anger management strategies for older children emphasize identifying emotion triggers, learning how to cope with intense emotion, engaging in role playing, and achieving stress inoculation (Lochman, Boxmeyer, Powell, Barry, & Pardini, 2010; Weisz, 2004). Recent research has focused on cognitive perspective taking, in order to foster empathy (Frick & Viding, 2009). With respect to treatment focused on personality characteristics, such as callous–unemotional traits, researchers have emphasized that these characteristics are at least somewhat malleable (Frick & Viding, 2009; Kolko & Pardini, 2010). Overemphasizing the unchangeable nature of personality characteristics and behaviors may lead to a focus on punishment and segregation rather than psychotherapy (Tolan & Titus, 2009).

For children and adolescents diagnosed with conduct disorder, there is some data suggesting that mood stabilizers may be useful, but overall there is not a lot of work on medication management for CD (Burke et al., 2003; Donovan et al., 2004). When additional disorders (such as ADHD) are present, medication plus therapy improves outcomes (Burke et al., 2003). However, even with successful treatments, with meaningful decreases in externalizing behaviors, many children and adolescents still struggle (Kolko & Pardini, 2010). The hurtful dimension of ODD predicts ongoing severe problems following treatment (Dishion, 2014; Kolko & Pardini, 2010).

Parent Treatments

For decades, most of the interventions focused on parent training—particularly behaviorally oriented parent training, frequently referred to as *parent management training (PMT)*. There is overwhelming support for the role of this training in the treatment of externalizing disorders in children and adolescents (Bierman & Sasser, 2014; Forgatch & Patterson, 2010). The goals of PMT, across all variations of PMT, involve decreasing coercive interactions, increasing positive parenting, and increasing compliant behavior and prosociality. The Oregon model is based on social interaction learning processes and "includes two contingency mechanisms for change. The first mechanism describes interaction within the family, primarily negative reinforcement provided to children for deviant behavior. The second mechanism involves contingencies in the social environment outside the home, primarily from peers" (Patterson et al., 2010, p. 950). According to Patterson et al. (2010, p. 949), "strengthening parenting sets in motion an avalanche of enduring effects that generalize throughout and beyond the family." That is, changes in target behaviors lead to changes in other behaviors, change in one family member (parent or child) leads to change in other family members, and changes in families' social interactional patterns lead to new social communities.

Eyberg's (1988, 2005) Parent–Child Interaction Therapy (PCIT) is an empirically supported, developmentally informed intervention for children with disruptive behavior problems and their parents. PCIT recognizes that the parent–child relationship provides a powerful context for understanding and changing behavioral patterns in young children. Using a variety of techniques, the parent and therapist collaborate to understand the nature and effects of the parent's behavior on the child, to discover and practice new ways of interacting with the child, and to acknowledge both the problematic aspects of the parent's behavior and her/his capacity to modify those behaviors to change the child's behavior and experience of the world. Together, the parent and therapist work to create specific improvements in the child's behavior as well as a broader foundation of security and satisfaction in the parent–child relationship upon which the child can organize a more adaptive and competent developmental trajectory (Yates, Burt, & Troy, 2011).

In addition to treatment components that focus on parents' interactions with their children, some parents will require other types of individual and family-based supports. The treatment of parent psychopathology is especially important. Dishion (2014, p. 452) emphasizes the importance of setting aside blame or scorn when dealing with struggling parents: "A modicum of compassion enables us to appreciate how parenting can be disrupted when isolated mothers care for young children without adequate support." Less immediately compelling, but no less essential, are efforts to increase positive parenting characteristics such as optimism and warmth in order to promote good outcomes for both children and parents (Jones et al., 2002; Patterson & Fisher, 2002; Sheeber, Biglan, Metzler, & Taylor, 2002). For families from disadvantaged backgrounds, attention to factors that enhance treatment participation, as well as additional post-treatment support, may be necessary to sustain treatment gains (Chacko et al., 2015; Leitjen, Raajimakers, de Castro, & Mattys, 2013).

As noted, there is clear empirical support for these interventions for both children and adolescents. Indeed, "effective parenting is the most powerful way to reduce adolescent problem behaviors" (Kumpfer & Alvarado, 2003, p. 457), although improvements do not always bring adolescents into the normal range of functioning (Bierman & Sasser, 2014; Dishion, 2014; Thomas, 2006). Both parents and families in treatment have high dropout rates; designing one-session interventions, therefore, may be a meaningful therapeutic approach (Lim, Stormshak, & Dishion, 2005).

Comprehensive, Peer, School, and Residential Programs

The research is overwhelming that intensive, multimodal approaches work best. One example of such an approach is multisystemic therapy, based on Henggeler's research (Henggeler & Lee, 2003; Weisz, 2004). The mechanisms and direction of change in multisystemic therapy include the following: adherence to treatment model → improved family relationships → decreased delinquent associations → decreased delinquent behavior. Good outcomes have been repeatedly demonstrated with multisystemic therapy, including 18 months following the end of treatment (Butler, Baruch, Hickey, & Fonagy, 2011). The benefits of multidomain interventions are that achievements in specific domains can mitigate risks in others. In other words, risks associated with adverse neighborhood contexts can be lessened by positive parenting; risks related to harsh and inconsistent parenting can be lessened by

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success at school; and risks due to difficult early school experiences can be lessened by parents who communicate and support their children (Bierman & Sasser, 2014; Dodge et al., 2008).

Peer groups for conduct-disordered youth are common. One critical caveat about treatments that involve groups of conduct-disordered adolescents relates to peer contagion and deviancy training (previously discussed in the section on developmental course). Peer contagion and deviancy training involve sharing information about conduct problems, including drugs, weapons, targets of negative behaviors, and the immediate and powerful reinforcement of deviancy (Dishion, 2014). Thinking back to descriptions of the role of deviant peers in eliciting and maintaining conduct-disordered behavior, it is not hard to imagine the likely effects of including deviant peers in treatment settings. Although "proponents believe that deviant youth can empathize with each other, learn valuable lessons from each other, and provide real-life interactions for each other that are grist for intervention," numerous clinical trials indicate not only a lessening of positive impact, but also increasing adverse impacts, with worse outcomes compared to control groups (Dodge, Dishion, & Lansford, 2006). Participants with lower initial levels of delinquent behavior are at particular risk (Dishion, Bullock, & Granic, 2002; Macgowen & Wagner, 2005).

Well-intentioned adults need to be increasingly cautious about who to include in treatment groups (which include residential interventions, group homes, and group therapies such as social skills training) because "perversely, much of what we do as public policy is to segregate deviant youth from their mainstream peers and assign them to settings with other deviant youth" (Dodge et al., 2006, p. 3). "The best empirical evidence suggests that the first solutions are to eliminate the routine practices of tracking low-performing youth into isolated class-rooms, mandatory grade retention, self-contained classrooms for unruly students in special education, group in-school suspension, placement into alternative schools, and expulsion" (Dodge et al., 2006, p. 11). In order to support children and adolescents with conduct disorders, prevention and treatment programs must be reworked to focus on adults (parents and teachers) and nondeviant peers, and changes must be made across disciplines and in mental health clinics, educational and school settings, the juvenile justice system, and community organizations (Dodge et al., 2006).

School-based programs are very important for some children and have shown success in reducing coercive and antisocial behaviors (Barrera et al., 2002; Leff, Costigan, & Power, 2004; Webster-Stratton, Reid, & Stoolmiller, 2008). Community interventions designed to promote effective discipline techniques and decrease parent–child conflicts supplement individual, family, and school plans.

Out-of-home treatments are increasing, with family-style residential care and token economies showing good outcomes for some adolescents (Field, Nash, Handwerk, & Friman, 2004). Specialized foster care may be an option (Dodge et al., 2006). Military-style residential programs ("boot camps") can work, but their efficacy may depend on adolescent willingness to participate (Weis, Whitemarsh, & Wilson, 2005). Both boys and girls improve in these settings, but they appear less useful to girls with a history of maltreatment and comorbid internalizing disorders (Weis et al., 2005).

Prevention

In the hopes of minimizing future treatment needs, prevention efforts allow for the possibility of reducing the rates and/or severity of ODD, CD, and antisocial behavior; universal, targeted, and individual strategies have been pursued (Bierman & Sasser, 2014; Dishion, 2014). One example of a universal measure that has been effective in decreasing disruptive behaviors in the classroom is the school-based part of the Fast Track intervention. Other school-based interventions focus on self-control, problem solving, and peer relationships (Bierman et al., 2007; Greenberg et al., 2003; Van Lier, Vuijk, & Crijnen, 2005). In many of these school-based programs, parents and families choose to participate, and levels of engagement in the therapeutic process differ. Programs designed to prevent bullying, as described earlier in the chapter, are increasingly incorporated in school curricula in many countries and cultures (Olweus, 2005); specific components of such programs focus on social competence and a positive school environment (Orpinas & Horne, 2006).

An example of a targeted measure involves screening high-risk children in preschool and primary grades before ODD problems have become entrenched (Jones, Dodge, et al., 2002). Targeted prevention might also be directed at promoting social competence and social skills in young children, thereby lessening the peer problems that are elicited by children's early externalizing behaviors. The younger the children, the more likely it is that negative cascades are minimized (Bornstein, Hahn, & Haynes, 2010; Shaw, Dishion, Supplee, Gardner, & Arends, 2006; Van Lier & Koot, 2010). Parents are also the recipients of targeted interventions, with programs designed to enhance maternal responsiveness and positive parenting in at-risk groups (Kochanska et al., 2008). To be especially useful, these efforts also should be well timed, with programs related to parent discipline offered during the child's preschool years.

Several prevention programs emphasize the need to promote child competence in as many ways as possible (Brody, Kim, Murry, & Brown, 2004). Youth development programs, designed to foster adolescent–adult relationships, also show long-term positive outcomes (Roth, Brooks-Gunn, Murray, & Foster, 1998). Combining these types of programs with child, parent, school, and community programs, with multiple options for maximum effect, is a further improvement. One example of a community prevention program is the "Overcoming the Odds" study, which compares African American adolescents' participation in gangs versus community organizations. One key aspect of this successful effort is connecting developmental strengths displayed by the adolescents with supports from their ecological contexts (Taylor et al., 2005). Overall, there are nine characteristics associated with effective prevention efforts: a comprehensive approach, a theory-driven model, a well-trained staff, varied methods, sufficient intervention intensity, opportunities for positive relationships, appropriate timing, sociocultural relevance, and outcome evaluation (Nation et al., 2003).

Key Terms

Prosocial behaviors (p. 171)
Conscience (p. 171)
Bullying (p. 174)
Oppositional defiant disorder (ODD) (p. 176)
Conduct disorder (CD) (p. 178)
Callous–unemotional characteristics (p. 179)
Child-onset subtype (p. 179)
Adolescent-onset subtype (p. 179)
Life-course persistent trajectory (p. 179)
Adolescence-limited trajectory (p. 179)
Aggression (p. 179)
Instrumental aggression (p. 179)
Reactive aggression (p. 179)
Overt aggression (p. 179)
Covert aggression (p. 179)
Overt pathway (p. 181)
Covert pathway (p. 181)
Authority conflict pathway (p. 181)
Coercion model (p. 181)
Developmental cascade models (p. 182)
Impaired social cognition (p. 184)
Peer contagion (p. 186)

Chapter Summary

- Important developmental tasks across emotional, cognitive, and behavioral domains are critical to the formation of typical self-regulatory and prosocial skills.
- The social context for the development of self-regulatory and prosocial skills is anchored in the parent–child relationship, especially in early development, and then widens over time to include peer and other social relationships. This broadening social context can serve as either a protective or risk factor in relation to the development of disruptive behavior problems.
- Bullying is characterized by negative actions intended to cause harm, that are repeated over time, and that involve a power differential between bully and victim.
- Oppositional defiant disorder (ODD) is characterized by a sustained pattern of negativistic, hostile, and defiant behavior. Irritability and impaired social cognition are also common symptoms of ODD.
- Although most children diagnosed with ODD do not go on to develop more severe forms of the

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disorder, ODD does significantly increase the risk for later conduct disorder.

- The presence of ADHD along with ODD is associated with a more negative prognosis.
- Conduct disorder (CD) is differentiated from ODD by the severity of the externalizing behaviors and the degree of impairment associated with the disorder.
- Conduct disorders are further differentiated by patterns of externalizing behaviors and whether the onset of the disorder occurs during childhood or adolescence.
- Callous–unemotional characteristics, such as lack of empathy or remorse, are associated with greater continuity of problems throughout development.
- Adolescence onset of conduct disorder is significantly more common than childhood onset.
- A number of etiological risk factors may contribute to the development of ODD and CD, including characteristics of the child (such as temperament), quality of parenting, genetics, and environmental factors.
- The etiological complexity of ODD and the overlap with normal range negative behavior in childhood makes assessment and diagnosis of ODD challenging.
- Because externalizing symptoms are usually identified more easily and earlier by observers, early diagnosis and intervention efforts are especially relevant for both ODD and CD.
- Differential diagnosis often focuses on the commonalities and distinctions among ODD, CD, and ADHD. In addition, both ODD and CD may be comorbid with either anxiety or depression.
- Intervention approaches that are intensive, comprehensive, multimodal, and implemented early have been shown to be most effective.

11 Anxiety Disorders, Obsessive-Compulsive Disorder, and Somatic Symptom Disorders

CHAPTER OUTLINE

Developmental Tasks and Challenges Related to Fears, Worries, and Emotion Regulation

Anxiety Disorders

The Case of Sophie: Separation Anxiety Disorder
The Case of Jack: Phobic Disorder
The Case of Aisha: Social Phobia
The Case of Chloe: Generalized Anxiety Disorder
The Case of Hannah: Panic Disorder

Obsessive-Compulsive Disorder

The Case of Danny

Somatic Symptom Disorders

The Case of Isabella

Developmental Course

Continuity and Course of Anxiety Disorders
Continuity and Course of Obsessive-Compulsive Disorder
Continuity and Course of Somatic Symptom Disorders

Etiology

Genes and Heredity
Physiological Factors
Child Factors
Parent Factors
Social and Environmental Factors

Assessment and Diagnosis

Intervention

Psychological Treatment
Pharmacological Treatment

IN A WORLD THAT can be realistically frightening (with adversity, violence, and natural disasters) and unpredictably threatening (with germs, spiders, or pain), many children and adolescents are diagnosed with anxiety-based disorders. Discussion of these disorders provides a useful illustration of the distinction between childhood problems and clinically significant disorders. Many children struggle with fears and worries that have a real, negative impact on daily functioning. For some children, taking a bath is a sudsy disaster because they are afraid of the water, or of going down the drain. For other children, thunderstorms ruin a family's evening. Parents and mental health professionals need to take into account a variety of factors, including developmental context, the specific stimuli that elicit fear, and the degree of impairment, as they recognize, diagnose, and respond to children's anxiety-related problems and disorders.

Developmental Tasks and Challenges Related to Fears, Worries, and Emotion Regulation

We know that children feel, express, and control a variety of emotions and that emotional arousal is an integral component of emotional experiences. Ideally, emotional arousal is accompanied by emotion regulation or emotion control, which involves the "modulation, toleration, and endurance of emotions" (Denham, 1998, p. 148; see also Campos, Frankel,

& Camras, 2004; Gross, 2015). The regulation of difficult, negative, or intense emotions takes many forms, including emotion-focused strategies, cognitive strategies,and behavioral strategies. With age and experience, these strategies become more differentiated and organized, and individual differences in children's capacity for emotion regulation become increasingly apparent (Cole & Hall, 2008; Southam-Gerow & Kendall, 2002; Thompson, 2001). Some of these individual differences must be understood in the context of psychological variables such as control (Chorpita, 2001) and sociocultural variables such as family socialization of emotion regulation, ethnicity, and poverty (Anderson & Mayes, 2010; Thompson & Meyer, 2007).

The process of **emotion regulation (ER)** itself unfolds over time. From birth, there is an ongoing balance of independent and coordinated ER (Campos et al., 2004; Gross, 2015). Although we think of infants and toddlers as mostly supported in their ER efforts by their caregivers (as when a mother picks up and soothes a frightened child), babies also initiate ER by physically turning away from overwhelming stimulation or by cuddling with a special blanket. Preschoolers and young children are often ER partners with adults, as when a teacher and a child work together through an episode of anger. Older children and adolescents are usually expected to manage ER independently, so that an athlete on a team having a bad day might distract herself from looming fear or sadness in order to keep playing well during an important basketball game.

It is important to keep a couple of things in mind about the development of ER. First, as new strategies emerge, earlier strategies are not lost. We accumulate and organize strategies over the years, but sometimes (like the baby with the blanket), we still crawl under the covers for comfort. In addition, the simple ideas that we move from dependency on others to independent ER, and that independent ER reflects optimal adjustment, are inaccurate. A more complex notion includes older children's and adolescents' capacities for independent ER but emphasizes the flexible use of a variety of ER strategies in different situations (Zimmerman & Iwanski, 2014). Even well-adjusted adults sometimes seek comfort from others when afraid or anxious. Prominent child psychologists such as David Elkind (1994) suggest that ever-increasing demands for autonomy and self-reliance in youngsters are tied to changing cultural perspectives on childhood and childhood disorders. Earlier conceptions of children as innocent and in need of protection and direction have been replaced by current views of children as inherently skilled and competent. Elkind (1994, p. 119) says, "While some of these demands have allowed children to demonstrate formerly unrecognized competencies, many others are age-inappropriate, overwhelming, and stressful" and increase risks for vulnerable youth.

Finally, with respect to typical development, it is important to emphasize the useful and adaptive nature of much of the anxiety experienced by children (Beesdo, Knappe, & Pine, 2009; Ollendick, Grills, & Alexander, 2014). Wariness in the presence of strangers or on an unfamiliar bike path, or apprehension before an exam or a performance, provides children and adolescents with important information about the possibility of harm or the need to prepare for challenging activities. When signals are perceived and adjustments are made, anxiety usually diminishes quickly. Children who experience little or no anxiety may place themselves in risky or unsafe situations or fail to plan for demanding tasks. So, in line with the fundamentally adaptive function of emotion, we are looking for a healthy balance in the amounts of anxiety experienced and in the situations in which anxiety is elicited and supports adaptation.

With this background information, we are able to better understand the fears and worries that are part of almost every child's life. The fears and worries range from the relatively minor, such as getting poor grades, being sent to the principal, and having parents argue; to the more troubling, such as falling from high places or not being able to breathe; to the truly awful and dangerous, such as being hit by a car, getting burned in a fire, dying or seeing dead people, and being bombed or attacked (Ollendick et al., 2014). Although discussions of anxiety do not always differentiate between fears and worries, the distinction provides added clarity. **Fears** are defined as anxieties elicited *in the presence of a specific stimulus*. **Worries** are defined as anxieties *about possible future events*.

Most children exhibit one or more fears as part of typical development (Lieberman, 1993; Ollendick et al., 2014; see Table 11:1). A predictable sequence can be observed, with initial increases in fears and worries related to the cognitive capacity to understand risk and imagine potential harm. With the growth of knowledge, self-confidence, and ER strategies, most fears decline with age (Craske, 1997; Ollendick et al., 2014). Both age-related changes and individual differences influence the number and nature of children's fears. Cognitive development is perhaps the most relevant. Children's increasing abilities to make distinctions between fantasy and reality and to recognize, understand, and control danger are noteworthy achievements (Ollendick et al., 2014).

TABLE 11:1 Fears in Childhood

Toddlerhood
Thunder, lightning, fire, water
Darkness
Nightmares
Animals

4–5 years
Death, dead people

6–7 years
Strange, loud, or abrupt noises (e.g., animal noises, wind, and thunder)
Ghosts, witches, or other supernatural beings
Bodily injury
Separation from parents and being lost
Being alone at night
Being hurt or rejected at school

7–8 years
The dark and dark places
Real-life catastrophes (e.g, kidnapping, floods, fires, war)
Not being liked
Being left out of family or school events
Being hurt or rejected at school

8–9 years
Personal humiliation
Failure in school or play
Being caught in a lie or misbehavior
Being the victim of physical violence
Parents fighting, separating, or being hurt

9–11 years
Failure in school or sports
Becoming sick
Heights and sensations of vertigo (i.e., dizziness)
Sinister people (e.g., killers and molesters)

11–13 years
Failure in school, sports, or achieving popularity
Looking or acting strange
Life-threatening illnesses or death
Sex (attracting others, repelling others, being attacked)
Being fooled or humiliated

Adapted from Philadelphia Child Guidance Center (1993) and Beesdo et al. (2009).

Biologically based sensitivity to certain kinds of emotional information (e.g., threat-related signals) is associated with both age-related changes and individual differences in brain–behavior relations (Leppanen & Nelson, 2012). Individual differences in overall temperament, shyness, and behavioral inhibition are also key factors related to the emergence of fears (Fox, Henderson, Marshall, Nichols, & Ghera, 2005). Gender also plays a role, with girls exhibiting more fears than boys (Craske, 1997; Ollendick et al., 2014). Factors such as race, ethnicity, religion, and ecological context influence children's fears as well (Ollendick et al., 2014). Children from Africa, for instance, report higher levels of fears than children from the United States, China, or Australia; and children from Christian backgrounds report higher levels of fears than children from Muslim backgrounds (Ingman, Ollendick, & Akande, 1999). Latino children, especially younger ones, report more fears than white children (Varela & Hensley-Maloney, 2009).

In contrast to fears, worries involve somewhat more vague concerns about possible threats. The three most common types of worries are tied to health, school, and personal harm (Silverman, La Greca, & Wasserstein, 1995). Preschoolers are worried most about imaginary and supernatural events, five- and six-year-olds by their physical well-being, and 8- to 12-year-olds by social and behavioral competence and psychological well-being (Ollendick et al., 2014). As with fears, age-related changes and individual differences are important. Girls, again, worry more than boys (Craske, 1997; Silverman et al., 1995). Latino children and black children worry more than white children (Silverman et al., 1995; Varela & Hensley-Maloney, 2009).

In order to deal with their everyday fears and worries, children display a variety of effective and ineffective coping strategies. Emotional strategies (e.g., minimizing or maximizing facial expressions), cognitive strategies (e.g., thinking of something else, talking with others), and behavioral strategies (e.g., avoidance, asking for help) are all common (Denham, 1998; Ollendick et al., 2014). For most children, specific fears and worries are distressing; now and then, they may make relationships, activities, and routines more difficult. In general, though, most anxieties are transient. Individual coping efforts, support from others, and time itself eventually lead to good adaptations. For some children, however, fears and worries are more problematic, signaling an anxiety disorder that is both painful and disabling. These children are the focus of the rest of this chapter.

Anxiety Disorders

Anxiety disorders are ubiquitous and are among the most frequently diagnosed psychopathologies in children, adolescents, and adults. Juxtaposed with high rates of anxiety and impairment are relatively low rates of treatment (Vasey, Bosmans, & Ollendick, 2014). **Anxiety disorders** are internalizing disorders in which

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Occasional anxiety and distress are typical responses to novelty and new situations for most children.

anxiety has gone from typical or adaptive to pathological in terms of its intensity, duration, and/or pervasiveness. All of the anxiety disorders are characterized by inhibition and withdrawal, exaggerated and unrealistic fears and worries, overcontrolled behavior, and somatic symptoms. Avoidance is also a key component of these disorders. Although there is underlying similarity, there are distinctive perceptions, thoughts, emotions, levels of arousal, behaviors, somatic symptoms, and effects on relationships that are associated with particular types of anxiety disorders (see Table 11:2).

In addition to the primary symptoms of anxiety, many children and adolescents exhibit **anxiety sensitivity**, involving hypervigilance and attention to bodily sensations, a tendency to focus on weak or infrequent sensations, and a disposition to react to somatic sensations with distorted cognitions (Allan et al., 2014; Knapp, Blumenthal, Mischel, Badour, & Leen-Feldner, 2016). Anxiety sensitivity may be understood as a kind of distress tolerance, "where high anxiety sensitivity involves a decreased capacity to tolerate anxiety states and sensations and, conversely low anxiety sensitivity involves an increased tolerance" (Weems, 2011, p. 28). Developmental and sociocultural factors are important influences on individual differences in anxiety sensitivity (Weems, 2011).

Epidemiological studies of anxiety disorders in children and adolescents converge on prevalence rates around 10% (Vasey et al., 2014). In both childhood and adolescence, girls are diagnosed with anxiety disorders more frequently than boys (Beesdo et al., 2009). Anxiety disorders are among the earliest-appearing psychopathologies. High-risk phases for the initial onset of anxiety disorders vary by specific anxiety disorder (Beesdo et al., 2009; Vasey et al., 2014).

Between 40% and 60% of children and adolescents with one anxiety disorder also meet the diagnostic criteria for another (Rapee, Schniering, & Hudson, 2009; Vasey et al., 2014). Comorbidity with other psychopathology is also essential to consider, as children and adolescents with multiple disorders (e.g., anxiety and depression) experience more severe symptoms and have more psychosocial risk factors (Beesdo et al., 2009; Vasey et al., 2014).

There are also topics that require additional investigation, such as the nature of anxiety in ethnic minority youths (Anderson & Mayes, 2010; Beidas et al., 2012; McLaughlin, Hilt, & Nolen-Hoeksema, 2007). Findings from these investigations include data about higher levels of somatic symptoms of anxiety in Latino youth and higher levels of physical symptoms of anxiety in black boys and adolescents (McLaughlin et al., 2007; Varela & Hensley-Maloney, 2009). The cultural context in which anxiety is experienced and expressed is the topic of many recent studies. According to Varela and Hensley-Maloney (2009), the impact of culture can be observed in perceptions of physical versus mental illness, the interpretation and/or meaning of symptoms, and the manner in which struggling individuals cope with anxiety and are supported by family and community.

The Case of Sophie: Separation Anxiety Disorder

Sophie is a six-year-old girl starting first grade. She enjoyed kindergarten and was in the same class as her close friend and neighbor. Early in the summer, her mother had surgery and was hospitalized for several days. Although she made a good recovery, the event was stressful for Sophie. As the summer progressed, Sophie became increasingly concerned about her mother's well-being, despite frequent reassurances. Sophie also began to have difficulty staying with her babysitter and needed her mother to call frequently if she was away from home.

The first several days of first grade were uneventful for Sophie, but she was unhappy about the fact that her best friend was in a different classroom. Late in the first week of school, Sophie refused to get on the school bus, and her mother drove her to school. The following morning, Sophie said that she felt too sick to go to school. By the following week, Sophie was upset about going to

TABLE 11:2 Clinical Comparison of Anxiety Disorders

	SEPARATION ANXIETY	PHOBIAS	GENERALIZED ANXIETY DISORDER	PANIC DISORDER
Perception	• Separation is perceived as threatening.	• Specific objects, events, or situations are perceived as threatening.	• The whole environment is perceived as threatening. • The child is hypervigilant, scanning the environment for threats to well-being.	• The recurrence of a panic attack is seen as threatening. • Attention is directed inward, and benign somatic sensations are perceived, but misinterpreted as threatening.
Cognition	• The child believes that harm to the parent or the self will occur following separation.	• The child believes that contact with the phobic object or entry into the phobic situation will lead to catastrophe.	• The child catastrophizes about many minor daily events.	• The child believes that the panic attacks may lead to death or serious injury.
Affect	• Intense fear or anger occurs when separation is anticipated, during separation, or following separation.	• Intense fear or anger is experienced if contact with the feared object or situation is anticipated or occurs.	• A continual, moderately high level of fear is experienced, often called *free-floating anxiety.*	• During panic attacks, intense fear occurs, and between attacks, a moderate level of fear of recurrence is experienced.
Arousal	• Episodes of hyperarousal • Sleep problems	• Episodes of hyperarousal • Sleep problems	• Continual hyperarousal • Sleep problems	• Episodes of extreme hyperarousal against a background of moderate hyperarousal • Sleep problems
Behavior	• Separation is avoided or resisted. • The child refuses to go to school. • The child refuses to sleep alone.	• The phobic object or situation is avoided.	• As worrying intensifies, social activities become restricted.	• The child may avoid public places in case the panic attacks occur away from the safety of homes. This phenomenon is called *secondary agoraphobia.*
Interpersonal adjustment	• Peer relationships may deteriorate. • Academic performance may deteriorate.	• With simple phobias, interpersonal problems are confined to phobic situations. • Agoraphobia may lead to social isolation.	• Peer relationships may deteriorate. • Academic performance may deteriorate.	• If agoraphobia develops secondary to the panic attacks, social isolation may result.

> school every morning, often crying and pleading to stay home. On days that she was allowed to stay home, she seemed quite happy and content. If forced to go to school, she was quite agitated, though she tended to calm down over the course of the day. The daily struggle has continued for months, and Sophie, her mother, and her teacher are all upset, exhausted, and hoping for some relief. ■

Sophie's symptoms are consistent with a DSM-5 diagnosis of **separation anxiety disorder (SAD)** (see Table 11:3). The symptoms include significant distress when separated from home or attachment figures. The key developmental criterion is that the anxiety must be age-inappropriate. In younger children like Sophie, anxiety is often focused on the caregiver's well-being or possible harm that may befall the caregiver. In older children and adolescents, anxiety is also frequently related to difficulties being away from home and is expressed in a reluctance or refusal to go to school. A typical clinical pathway for SAD "shifts from nightmares at ages five–eight, to somatic complaints at ages 9–12, to school refusal in adolescence"(Vasey et al., 2014, p. 546).

Sophie's struggles with somatic problems are also common; headaches and stomachaches are frequent complications of SAD. Nightmares and panic symptoms may also occur with the disorder. Estimates of SAD range from about 4% in 6- to 12-year-old children to 2%–3% in adolescents (Vasey et al., 2014). SAD is most common in children and more frequently diagnosed in girls; it is one of the earliest-appearing anxiety disorders (Beesdo et al., 2009; Vasey et al., 2014).

TABLE 11:3 Separation Anxiety Disorder: Summary of DSM-5 Diagnostic Criteria

A. Developmentally inappropriate and excessive anxiety concerning separation from those to whom the individual is attached, as evidenced by at least three of the following:
   1. Distress when anticipating or experiencing separation from home or major attachment figures.
   2. Persistent and excessive worry about losing a major attachment figure.
   3. Persistent and excessive worry about experiencing an untoward event (e.g., getting lost, kidnapped, illness) causing separation from a major attachment figure.
   4. Persistent reluctance to leave home without major attachment figure.
   5. Excessive fear of being alone without major attachment figure.
   6. Persistent reluctance to sleep away from home.
   7. Repeated nightmares involving the theme of separation.
   8. Repeated complaints of physical symptoms when separated from major attachment figure.

B. The fear, anxiety, or avoidance is persistent, lasting at least four weeks in children and adolescents.

C. Symptoms cause clinically significant impairment in current functioning.

The Case of Jack: Phobic Disorder

> Jack is a seven-year-old boy who has developed an intense and pervasive fear of dogs. He has never had a pet and has never been very comfortable around animals. Recently, while playing in the backyard, he was surprised by his neighbor's dog, which had gotten out of its fenced yard. The dog barked aggressively at Jack, though it did not approach him. Jack was quite frightened and ran into his house crying. Following this incident, Jack began to refuse to play outside if the neighbor's dog was out. This progressed to refusing to play outdoors at all. Jack soon begged to be excused from visiting family friends if they had a dog at their home, unless the dog was kept out of sight. If Jack is out with his parents and sees a dog, he becomes upset and agitated, cries, and clings to his mother.

Phobic disorders involve excessive and exaggerated fears of particular objects or situations, intense anxiety in the presence of such objects or situations, and avoidant behaviors; the fears and anxieties are associated with significant impairment (Beesdo et al., 2009; Vasey et al., 2014). DSM-5 distinguishes a variety of **specific phobias,** including animals (like Jack's phobia), situations (e.g., fear of flying), injury or blood, and natural phenomena (e.g., thunderstorms). Related to specific phobias are **social phobia** (e.g., fear of scrutiny or evaluation by others) and **agoraphobia** (i.e., intense anxiety in places where individuals feel insecure, trapped, or not in control). Prevalence estimates are about 5% to 7% for specific phobias in children and adolescents, with more girls diagnosed than boys; children are often diagnosed by six or seven years of age (Vasey et al., 2014). As with other anxiety disorders, developmentally informed assessment is important. Many children exhibit fears; we want to differentiate those children for whom fears are mild or moderate and short lived from those children for whom fears are intense and long lasting.

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The Case of Aisha: Social Phobia

Aisha is an 11-year-old girl in sixth grade at a large suburban middle school. She has always had some difficulty adjusting to new situations and has been described as "slow to warm up" when meeting new people. But neither her parents nor her teachers had expressed significant concerns until this year—her first in middle school. Aisha's parents note that at home, she is generally energetic and fun loving. And although she was seen as quiet and reserved at her elementary school, Aisha enjoyed close friendships with several other girls and never resisted going to school.

Aisha has struggled in several noteworthy ways since starting middle school. From the start of the year, she seemed to be anxious and distressed from the time she woke up in the morning until her return home at the end of the day. She complained that not only was she not making new friends at middle school, but her best friends from elementary school were also developing new groups of friends that she believed were excluding her. Her schoolwork suffered, and she seemed to lose confidence in her abilities as a student. Aisha struggled, in particular, with the increasing focus on group projects, where she was reluctant to offer ideas for fear that the other students would "think they were stupid." On those occasions where groups were required to meet outside school, Aisha would often neglect to tell her parents in order to avoid having to go to another student's home.

In fact, Aisha was beginning to miss a considerable amount of school because of frequent stomachaches and occasional headaches. In elementary school, Aisha enjoyed participating in music concerts and having small parts in class plays. Thinking it might help her adjustment to middle school, her parents encouraged her to try out for the all-school musical production. Reluctantly, Aisha signed up. But when the day came to audition, she called her mother, crying, and told her that she didn't feel well and couldn't perform in front of other students and teachers.

Confused and distressed, Aisha's parents talked with her about her increasing avoidance of activities that she had previously enjoyed. Aisha, with tears welling up in her eyes, insisted that she was no longer interested in the same things as when she was younger, noted that the kids and teachers at the middle school were mean and did not like her, and said that she would be fine if she could simply come home after school and do her homework on her own. ■

Social phobia is not just shyness or inhibition. Shyness is a complex psychological construct, and it is sometimes difficult to distinguish between typical and atypical social anxieties. It may be useful to think of it as a continuum, with groups of shy children followed by groups of socially anxious children followed by groups of socially phobic children (Albano & Hayward, 2004; Rapee & Sweeney, 2005). Shy children are those who may be slow to warm up at a friend's birthday party but who eventually join in the fun; socially anxious children are those who stay huddled next to a parent for the party's duration; and socially phobic children cannot attend the party at all.

One of the most compelling manifestations of social phobia is displayed by children and adolescents with performance anxiety. Studies of talented young musicians suggest that distress and impairment related to performance anxiety are quite common and are accompanied by a range of coping strategies (Fehm & Schmidt, 2006; Osborne, Kenny, & Holsomback, 2005). Other forms of social anxiety are observed in adolescents who cannot complete certain school projects that require oral presentations, or adolescents who cannot eat with their friends in restaurants. Social phobia is sometimes observed in combination with selective mutism, with selective mutism understood as part of a larger pattern of avoidant behavior (Vasey et al., 2014). Prevalence rates for social phobia range from 1% to 6%, with similar rates for both girls and boys (Vasey et al., 2014). Compared to the other anxiety disorders, social phobia usually has its onset in later childhood or adolescence (Beesdo et al., 2009).

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For children experiencing social phobia, anxiety symptoms often prevent them from enjoying developmentally important group activities.

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The Case of Chloe: Generalized Anxiety Disorder

Chloe is a nine-year-old girl presenting with a high level of general distress. She was originally referred for evaluation because of concerns raised at school about some learning difficulties and problems related to extreme avoidance behavior. These problems included not talking in class, not turning things in, not going to her locker, and not interacting with other kids on the playground. For several months, Chloe has refused to ride the school bus, so her mother has driven her to school. Although Chloe has always liked sports, she will only play soccer and softball with her parents or her older brother, and only in their yard. Her parents have tried several times to encourage her participation on a team, but Chloe became so anxious and upset before games that she became nauseated and refused to get out of the car at the playing field.

Recently, Chloe has been unable to use public restrooms because she says that they scare her. After witnessing a classmate vomit in class on a hot spring day, she has become preoccupied with a fear that she will also vomit if she becomes too warm. Consequently, she has come to associate being hot with being nauseated and insists on always being in air-conditioned buildings during the summer.

Chloe has difficulty sleeping because of her tendency to ruminate. She describes this as being "unable to shut my brain off." She also worries at night that she will be kidnapped. Chloe is interested in theater and would like to participate in school plays and summer community theater programs, but she says that she is too nervous to try out. When asked if she could change one thing about her life, Chloe says that she would most want to be able to be in a play. Chloe's mother describes her as "afraid of her own shadow." ■

TABLE 11:4 Generalized Anxiety Disorder: Summary of DSM-5 Diagnostic Criteria

A. Excessive anxiety and worry, occurring more days than not, lasting at least 6 months, about a number of events or activities.

B. The individual finds it difficult to control the worry.

C. The anxiety and worry are associated with at least three of the following symptoms (only one required for children):
  1. Restlessness.
  2. Easily fatigued.
  3. Difficulty concentrating.
  4. Irritability.
  5. Muscle tension.
  6. Sleep disturbance.

D. The anxiety, worry, or physical symptoms cause clinically significant impairment in important areas of functioning.

Chloe's presentation is consistent with the DSM-5 criteria for **generalized anxiety disorder (GAD)**, with excessive and unrealistic worries and fears about a variety of stimuli and situations (see Table 11:4). Prevalence is estimated at about 2%, with similar rates for girls and boys, and average onset at about eight years of age (Vasey et al., 2014). GAD is observed throughout the childhood years, although it is more commonly diagnosed in older children, adolescents, and adults. There are conflicting data about whether children diagnosed with GAD report more somatic symptoms than children with other anxiety disorders (Ginsburg, Riddle, & Davies, 2006; Hofflich, Hughes, & Kendall, 2006). Children with GAD receive comorbid diagnoses of obsessive-compulsive disorder and mood disorders more frequently than children with other anxiety disorders (Verduin & Kendall, 2003).

The Case of Hannah: Panic Disorder

Hannah is 15 years old and in ninth grade. Hannah's parents have accompanied her for a consultation following several panic attacks that happened during the school day. Hannah's parents describe her during her early years as bright, friendly, and somewhat reserved. Although she has always been somewhat anxious in new situations, she has a number of close friends and is a talented musician. At home, Hannah is talkative and even mildly argumentative at times; at school, she is seen as quiet and serious.

Hannah's parents first became concerned about her in sixth grade, when she transitioned from elementary school to junior high. At the start of that school year, Hannah began to complain of stomachaches and to miss school frequently. Her symptoms gradually receded as she became more comfortable with her new environment. Hannah acknowledges that the start of each school year has been a struggle for her, although never quite as severe as in sixth grade.

Hannah was nervous about high school but also looked forward to the new school and new experiences. Overall, Hannah's parents were pleased with her adjustment. She found her classes challenging but engaging, and she was enjoying new opportunities provided by an expanded music program. Socially, she stayed close to junior high friends and said that she found it difficult to venture out and make new friends.

One day, while eating lunch alone in the cafeteria, Hannah began to feel ill. She felt her pulse racing and became short of breath. She was lightheaded and nauseated. She made it to the first class after lunch, where her teacher immediately asked her if she was all right. Hannah said she felt as if she might pass out and was sent to the nurse's office. Once there, she began to cry and told the nurse that she was afraid she would die. After lying down for a short time, Hannah began to feel better and had largely recovered by the time her mother came to pick her up.

The next morning, Hannah complained of a headache and expressed anxiety about returning to school. Her mother encouraged her to go, though, reassuring her that she would come and get her if she became ill. After several days without incident, Hannah had a second attack, during which she felt dizzy and nauseated, felt her heart pounding, and had trouble breathing. This occurred at a football game, just after Hannah performed in the band's halftime program. Again, she reported feeling a sense of panic that she might be dying. Hannah has not been able to return to school since the second panic attack. ■

Hannah meets the DSM-5 criteria for **panic disorder**. Recurrent, somewhat unpredictable panic attacks are the primary component of panic disorder. Panic attacks are extremely intense and uncomfortable episodes of anxiety. Sometimes panic occurs in typically developing children without other symptoms and with few negative consequences. Although certainly distressing, these isolated attacks are not necessarily cause for alarm. However, when panic attacks are associated with one of the other anxiety disorders, such as separation anxiety disorder, phobias, or generalized anxiety disorder, they are more likely to be understood as a complication of that specific disorder rather than as a separate disorder.

Panic disorder is usually diagnosed in adults but may be observed in adolescents (Vasey et al., 2014). Girls are more frequently diagnosed than boys, but the gender difference in rates increases further over the course of adolescence and young adulthood (Beesdo et al., 2009). Preliminary investigations of personality characteristics in adolescents with panic disorder identify three subtypes: high functioning/dysphoric, emotionally dysregulated, and avoidant. These subtypes are similar to those observed in adults and suggest the early appearance of specific patterns of personality and impairment (Powers & Westen, 2010). Comorbid disorders include other anxiety disorders, major depression, and bipolar disorder and are observed more frequently in girls than boys with panic disorder (Diler et al., 2004).

Obsessive-Compulsive Disorder

The Case of Danny

Danny is a 13-year-old boy referred because of concerns noted by both his parents and teachers about some of his increasingly unusual behaviors. He has been an excellent student throughout his school years until this term, in eighth grade, when he began to fall behind in his classes. His parents also reported that he has dropped several favorite activities and become increasingly socially isolated. During the initial assessment, Danny took an unusually long time to complete some simple questionnaires. When asked about this, he admitted that he felt compelled to count the words in each sentence before reading it. He said that this has become a real problem because he can no longer complete his homework on time. Danny also described counting steps and feeling that he always needed to finish climbing stairs with his right foot. In fact, he has memorized the number of steps throughout his school, church, and home so that he always knows which foot to start with. If he does finish climbing stairs with his left foot, he feels compelled to go back down the stairs and start over.

Although he has never worried about germs before, he is now very concerned about them and has begun carrying a cloth with him so that he does not have to touch things like doorknobs or public telephones. He also finds himself washing and rewashing his hands as often as he can throughout the day. He also said that after he showers, he often still feels dirty and so immediately takes another shower. This has recently caused him to be late getting to school on many mornings. ■

This description of Danny reflects the acute distress and level of impairment associated with **obsessive-compulsive disorder (OCD)** (see Table 11:5). Danny's intrusive concerns about germs and contamination and his repetitive counting behaviors are among the most common symptoms. Other characteristic obsessions involve fear of harming others, death, or sex; prevalent rituals include handwashing,

TABLE 11:5 **Obsessive-Compulsive Disorder: Summary of DSM-5 Diagnostic Criteria**

A. Presence of obsessions, compulsions, or both:
Obsessions are defined by:
  1. Recurrent and persistent thoughts, urges, or images that are experienced as intrusive and unwanted.
  2. Individual attempts to ignore or suppress such thoughts, urges, or images, or to neutralize them with some other thought or action.

Compulsions are defined by:
  1. Repetitive behaviors (e.g., hand washing, ordering, checking) or mental acts (e.g., counting, repeating words silently) that the individual feels driven to perform in response to an obsession or according to rigidly applied rules rigidly.

B. The behaviors or mental acts are aimed at preventing or reducing anxiety or preventing some dreaded event; however, these behaviors or mental acts are not connected in a realistic way with what they are designed to neutralize or prevent, or are clearly excessive.
Note: Young children may not be able to articulate the aims of these behaviors or mental acts.

C. The obsessions or compulsions are time-consuming or cause clinically significant impairment in important areas of functioning.

checking, and avoidant behaviors. In previous editions of the DSM, obsessive-compulsive disorder was included with the anxiety disorders. In DSM-5, obsessive-compulsive disorder is in its own section, with related disorders, including hoarding disorder (a new category), body dysmorphic disorder, hair-pulling disorder (trichotillomania), and skin-picking disorder (another new category).

It is important to evaluate children's **obsessions** (i.e., persistent and intense intrusions of unwanted thoughts or images) and **compulsions** (i.e., persistent and intense impulses to perform a specific behavior) within a developmental framework, because many children display specific preferences and rituals that are not pathological (Kraper, Soto, & Carter, 2014). For instance, prescribed sequences of separation behaviors at day care centers or bedtime routines are common, but most of these kinds of rituals fade by later childhood. It is also important to consider the distinctions between the obsessions observed in OCD and the pathological worrying that is more consistent with a diagnosis of generalized anxiety disorder (Comer, Kendall, Franklin, Hudson, & Pimentel, 2004).

Four distinct symptom dimensions of OCD in children have been identified: compulsions, sexual and aggressive obsessions, superstitions, and hoarding/ordering/somatic concerns (Kraper et al., 2014; McKay et al., 2006). A number of additional features of OCD have been described as well. These include poor insight (associated with early onset and severity), avoidance (also associated with severity), indecisiveness (associated with impairment), sense of responsibility, pervasive slowness (i.e., excessive amounts of time to complete simple tasks), and pathological doubting (Lewin, Caporino, Murphy, Geffken, & Storch, 2010). New research has also focused on the phenomenology and correlates of rage in children with OCD. Rage outbursts were associated with additional impairment and family accommodation to the OCD symptoms (Storch et al., 2012).

Childhood prevalence rates for OCD range between 2% and 4% (Kraper et al., 2014). There are data that suggest that boys are at higher risk than girls, but more research remains to be done on both gender and multicultural variables. The timing of onset reflects a bimodal age distribution, with early onset around age 11 and later onset in early adulthood. More boys are diagnosed in childhood, but from adolescence forward, gender rates are similar (Kraper et al., 2014). OCD is frequently diagnosed in combination with other disorders, including anxiety disorders, tic disorders, depression, and externalizing disorders (Kraper et al., 2014). Sleep-related problems are also frequently observed (Storch et al., 2006).

Somatic Symptom Disorders

The Case of Isabella

Isabella is a 14-year-old girl, a good student who is well liked by her teachers. Although not rejected by peers, she is rather shy and spends most of her time with just a few friends. Isabella reports feeling ill frequently, and each year, she has missed many school days, including field trips and special events. Isabella's older sister had an emergency appendectomy several years ago. Ever since this event, Isabella's parents have been especially vigilant about Isabella's health.

Isabella's parents have extremely high expectations for their children's academic achievement; any problems with academic performance are viewed with great concern, and

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doing well is highly reinforced. Isabella's older sister is a top student at her high school, where Isabella is currently enrolled as a ninth grader. In the spring of eighth grade, Isabella began to show a pattern of frequent headaches and stomachaches in the morning that sometimes led to her being late to, and occasionally missing, school.

Beginning the second week of ninth grade, Isabella began complaining of severe, debilitating abdominal pain. After being called on several occasions to bring Isabella home from school because of pain, Isabella's parents became alarmed and brought her first to her pediatrician and then, after a particularly severe episode, to the emergency room. Preliminary assessments in each case could find no obvious cause for Isabella's symptoms. Finally, the specialist that the family consulted recommended hospitalization for more extensive and intrusive diagnostic procedures. After all of the findings from these tests proved negative, a psychology consult was requested.

Although initially skeptical of the involvement of the psychologist, Isabella and her mother were cooperative. The psychologist observed that although Isabella verbalized concern about missing school, she appeared relaxed and calm. In addition, although Isabella reported no lessening of her pain, she showed none of the obvious symptoms generally associated with extreme discomfort. When asked if she felt stressed or anxious about starting high school, Isabella denied having any worries about this, other than those related to falling behind in her work since being hospitalized. ■

Recurrent complaints of somatic (physical) symptoms are quite frequent among children and, under certain conditions, in adolescents. **Somatization** refers to a variety of processes in which aspects of psychological distress manifest themselves in physical symptoms (Gledhill & Garralda, 2006). Somaticizing persons generally do not differentiate between emotional and physical experiences and have difficulty using emotion language to express anxiety. Rather, they use somatic language to describe both physical and emotional problems. Although clinically significant **somatic symptom disorders** (called *somatoform disorders* in the previous DSM) are at the severe end of a continuum, occasional somatization (at least in mild and transient forms) is extremely common (Dell & Campo, 2011; Garralda, 2010). Indeed, it is the rare adult who does not have a childhood memory of the early-morning stomachache on the day of a big test. For some children and families, however, this process of somatization leads to clinically significant distress and impairment.

Discussion of these disorders is included as part of this chapter on anxiety-based psychopathology because somatic symptoms, like the compulsive and avoidant behaviors of OCD, serve to moderate the direct experience of anxiety; this moderation often comes with a very high cost. Some of the most common somatic symptoms include headaches, fatigue, pain, sore muscles, and abdominal distress. Girls report more symptoms than boys (Vila et al., 2009).

As with anxiety disorders, anxiety sensitivity appears to influence somatization (Mahrer, Montano, & Gold, 2012). An especially common and well-studied somatic symptom disorder involves recurrent abdominal pain (Dorn et al., 2003), as seen in the case of Isabella. Recurrent abdominal pain involves three or more episodes over a three-month period of severe pain that compromises a child's functioning. Studies of recurrent abdominal pain suggest that it tends to occur in families where illness is a central concern and where there is both somatic and emotional distress (Fritz, Fritsch, & Hagino, 1997; Garralda, 2010). Rates of recurrent health complaints may provide one estimate of the psychosocial health and well-being of youth in multiple countries (Ottava-Jordan et al., 2015).

Conversion disorder (functional neurological symptom disorder) is characterized by unexplained deficits in voluntary motor or sensory function that cannot be adequately accounted for by known pathophysiological mechanisms; psychological factors are clearly associated with the emergence of symptoms. Typical motor dysfunctions include paralysis, problems with balance, and difficulty swallowing. Typical sensory dysfunctions include loss of touch or pain sensation, double vision or vision loss, deafness, and hallucinations.

Developmental Course

Continuity and Course of Anxiety Disorders

Anxiety in children and adolescents is associated with diverse outcomes, from clear improvement for some to persistent struggles for others (Beesdo et al., 2009; Vasey et al., 2014). A number of investigations report a decline in anxiety disorders in early and middle adolescence, followed by increased rates in early adulthood (Allan et al., 2014). The stability of specific diagnoses over time (e.g., social phobia diagnosed at nine, and again at 14) reflects **homotypic continuity**. From a developmental psychopathology perspective, however, we also need to keep in mind the expected changes in the kinds of anxiety experienced over time. For instance, Weems (2008) suggests that separation anxiety and animal fears are predominant between six and nine years of age, generalized anxiety and danger and death fears between 10 and 13 years, and social anxiety between 14 and 17 years. If specific anxiety diagnoses change over time, these changes are likely related to developmental challenges and reflect **heterotypic continuity** (i.e., underlying similarity despite differences in observed patterns of emotion, cognition, and behavior). *Maladaptive anxious emotion* is the core feature that contributes to heterotypic continuity.

More specific outcome-related questions concern whether subsets of children with anxiety disorders can be identified who are at higher risk for continuity of psychopathology. Factors associated with these higher risks include being a girl, displaying more severe symptoms early in development, and higher levels of anxiety sensitivity (Allan et al., 2014; Buss, 2011). Children and adolescents with anxiety disorders often struggle with peer acceptance and friendships. The presence of positive peer relationships contributes to better outcomes; rejection or victimization is associated with worse outcomes (Frenkel et al., 2015; Kingery, Erdley, Marshall, Whitaker, & Reuter, 2010). The transition to young adulthood is an especially important time for the development of adult anxiety disorders (Copeland, Angold, Shanahan, & Costello, 2014).

With respect to the continuity of specific anxiety disorders over time, the highest rates of stability are observed for specific phobias and panic disorder. The most unstable diagnosis is social phobia (Beesdo et al., 2009). Even with relatively unstable trajectories, social phobia has been the focus of many investigations. Early behavioral inhibition has been identified as a key factor in the development of social phobia (Hirshfeld-Becker et al., 2007). These early markers are important because there are data that show that peers dislike children with social phobia more than children with generalized anxiety disorder or separation anxiety disorder (Verduin & Kendall, 2008). Peer difficulties may be one reason why children with social phobia are at substantial and higher risk for later depression (Beesdo et al., 2007; Kingery et al., 2010).

Continuity and Course of Obsessive-Compulsive Disorder

As with anxiety disorders, there are a number of developmental pathways observed for children and adolescents diagnosed with OCD. A meta-analysis of 16 study outcomes revealed that about 40% of children with OCD continued to display the full syndrome at various follow-up assessments, and another 19% continued to display subclinical symptoms. Early onset and increased duration of OCD predicted persistence (Stewart et al., 2004).

A number of problematic consequences are associated with ongoing OCD. In addition to negative personal effects (e.g., poor self-image, isolation), family life is negatively affected. Coercive and disruptive behaviors are often displayed by children and adolescents with OCD and are associated with attempts to impose rules and prohibitions on family members (Kraper et al., 2014; Lebowitz, Vitulano, & Omer, 2011). Parents of children with OCD expressed high levels of distress and helplessness in the face of OCD symptoms and attempts at control (Kraper et al., 2014; Lebowitz et al., 2011). Children with OCD are also more likely to be victimized by peers. Similar to children with anxiety disorders, peer difficulties are associated with later depression (Storch et al., 2006).

Continuity and Course of Somatic Symptom Disorders

Somatic symptom disorders interfere with family, peer, and school functioning (Dell & Campo, 2011; Garralda, 2010). One of the factors that appears to contribute to ongoing difficulties involves the social consequences of physical symptoms. For example, when children's pain is associated with positive attention and activity restriction, symptom maintenance is more likely (Walker, Claar, & Garber, 2002). However, "children's success in their normal social roles may affect the extent to which they identify with the sick role and find it a rewarding alternative to other social roles" (Walker et al., 2002, p. 689). Once established, a somaticizing pattern is generally chronic and resistant to both psychological and medical treatment (Walker, Sherman, Bruehl, Garber, & Smith, 2012). Individuals with somatic symptom disorders are subject to more frequent and more invasive medical procedures, leading to increased medical costs and potential medical problems. Children and adolescents with these disorders are also at increased risk for other psychopathology (e.g., anxiety, depression) (Shanahan et al., 2015; Walker et al., 2012).

Etiology

With so many types of anxiety-based psychopathology, this discussion of etiology is organized around the well-known observation that anxiety runs in families, and the multipart explanation of why and how it does. Before summarizing the long list of factors that influence the development and maintenance of anxiety (across anxiety disorders, obsessive-compulsive disorder, and somatic symptom disorders), it is necessary to take a few steps back in order to view anxiety in evolutionary perspective. Remember that much of the anxiety experienced by children and adolescents is useful and adaptive. But this understanding needs to be balanced with Pennington's (2002, p. 142) more contemporary insight that "evolution has prepared us to be more anxious than we need to be, especially given the relative safety of modern life." With this in mind, we can appreciate the many pathways that lead to anxiety-based disorders.

Genes and Heredity

Genetics has a significant impact on the development of both typical and pathological anxiety. Twin and family studies have provided ample evidence that anxious parents are more likely to have anxious children, and that the fears of monozygotic twins are more similar than the fears of dizygotic twins (Beesdo et al., 2009; Ehringer, Rhee, Young, Corley, & Hewitt, 2006). Data suggest that the genetic influence is the result of many genes, each with a small effect. Genetic influences increase with age, and the influence of shared environments decreases (Vasey et al., 2014). For the most part, the genetic role appears to involve a general vulnerability rather than a disorder-specific risk, although there may be important gender and environmental contributions (Trzaskowski, Zavos, Haworth, Plomin, & Eley, 2012).

Current research is focused on gene-by-environment processes for specific anxiety disorders. For example, some research suggests that genetic effects on generalized anxiety disorder are strongest for girls who experience high numbers of negative life events (Vasey et al., 2014). Other research emphasizes the complex relations among genetics, shared environments, and nonshared environments in the development and maintenance of separation anxiety disorder (Scaini, Ogliari, Eley, Zavos, & Battaglia, 2012).

An especially important finding involves the many connections between vulnerability to anxiety-based disorders and vulnerability to mood disorders. Over and over, the data suggest a clear overlap between genetic influences on the development of anxiety and the development of depression (Nivard et al., 2015; Zavos, Eley, & Gregory, 2013). Children with both of these internalizing disorders exhibit negative emotion and emotion dysregulation; there are several models that may explain the connections. First, the two types of disorders may share the same underlying etiologies. Second, there may be a temporal association, with anxiety usually preceding depression. Third, anxiety and depression may be distinct psychopathologies, each one increasing the risk that the other will develop. Other explanations involve specific environmental events that, coupled with underlying vulnerability, lead to the expression of either anxiety or depression (Zavos et al., 2013).

Physiological Factors

Hypotheses about genetically transmitted predispositions to anxiety-based disorders in children are numerous and clearly involve multiple mechanisms. Understanding neuroanatomy, neurophysiology, and neurochemistry are important for explaining both typical and pathological anxiety. Many investigations involve the study of the brain's right hemisphere, prefrontal cortex, or cerebellum (Vasey et al., 2014). Given its central role in the fear circuit and the processing of threat, the limbic system, particularly the amygdala, is another important research focus (Pine, 2007; Vasey et al., 2014). Amygdala abnormalities such as hyperactivation have been documented (Beesdo et al., 2009). There are extensive connections between cortical regions and the amygdala that develop over time; additional investigation of typical and atypical development of fear circuits is warranted (Swartz, Phan, Angstadt, Fitzgerald, & Monk, 2014). The autonomic nervous system and the hypothalamic-pituitary-adrenal (HPA) axis system are other contributors to risk (Pervanidou et al., 2007; Shea, Walsh, MacMillan, & Steiner, 2005). In addition, neurotransmitter dysfunctions have been observed (Feder et al., 2004; Hooper & Tramontana, 1997).

From the physiological perspective, then, hyperarousal and dysregulation are key contributors to increased risk for anxiety disorders, with early adverse experiences leading to stress sensitivity (Vasey et al., 2014). In addition, poor sleep exacerbates anxiety symptoms (Gregory & Sadeh, 2015). For OCD, research is focused on atypical development and function of the prefrontal-striatal circuits (Kraper et al., 2014; Snyder, Kaiser, Warren, & Heller, 2015). Certain infections may lead to pediatric autoimmune neuropsychiatric disorder associated with Streptococcus (PANDAS), an OCD-like presentation (Gause et al., 2009; Murphy & Toufexis, 2013).

Child Factors

With the emphasis on arousal and dysregulation described in the previous section, it makes sense that temperament is one of the child variables that is associated with anxiety disorders and OCD (Buss, 2011; Kraper et al., 2014). The temperamental trait most associated with anxiety is inhibition. Inhibition involves a unique mix of wariness, arousal, and emotional and behavioral preferences for any given child (Fox et al., 2005; Hirshfeld-Becker et al., 2007). This mix is part of a developmental profile that also includes parents, peers, and cultural context (Degnan, Almas, & Fox, 2010; Kagan & Fox, 2006). The many investigations by Kagan and his colleagues describe children at risk for later anxiety as both highly inhibited and highly reactive.

A number of ways that temperament influences anxiety problems have been described. In the diathesis-stress model, temperament is a risk factor that leads to anxiety in the presence of environmental stressors. Temperament characteristics such as inhibition or dysregulation may also co-occur with other factors that lead to anxiety (such as parental overprotection). Temperament and anxiety may interact with one another, with temperamental difficulties leading to increased anxiety and increased anxiety further increasing already high levels of negative affectivity and inhibition. Difficult temperament and anxiety may also share the same underlying dimensions. These varied processes are not mutually exclusive, and likely all of them contribute to multiple pathways to anxiety disorders (Vasey et al., 2014).

The experience of emotion and emotion regulation is also a primary factor in the etiology of anxiety disorders. Weems (2008) describes a developmental trajectory organized around the construct of anxious emotion. *Anxious emotion* reflects "dysregulation of the normal anxiety response system" (Weems, 2008, p. 492). It involves intense worries that are not useful in terms of anticipating upcoming danger or intense fears in the absence of real threat, as well as resulting impairment in functioning. Another way to think about emotion is to recognize the heterogeneity of fearful behavior and attempt to identify which dimensions of fearful behavior (e.g., increased distress or avoidance) underlie increased risk. In Buss's (2011) research, toddlers who displayed high fear in low-threat circumstances exhibited high physiological reactivity and less flexibility (i.e., more dysregulation). The hypothesis is that as children encounter increasingly varied environmental opportunities and challenges (e.g., during the transition to school), fear dysregulation increases wariness and withdrawal, and later anxiety disorders.

Another important emotion factor related to the emergence of anxiety disorders involves individual differences in emotion experience and emotion regulation. Children who experience frequent or intense negative emotions, and who lack the skills to regulate these emotions or the confidence that their efforts will have meaningful effects, are most vulnerable (Carthy, Horesh, Apter, & Gross, 2010; Vasey et al., 2014). Especially poor emotion regulation skills may differentiate children with obsessive-compulsive disorder from other anxiety disorders (Jacob, Morelen, Suveg, Jacobsen, & Whiteside, 2012).

The influence of cognitive variables on the development of anxiety disorders is also salient. Cognitive and attentional biases to perceive and attend more closely to threatening stimuli, cognitive appraisals of ambiguous situations as negative and threatening, and specific cognitive distortions related to the self (such as low self-efficacy) all contribute to increased risk for anxiety disorders (Cannon & Weems, 2010; Vasey et al., 2014). The level of cognitive development and the ability to correctly identify problematic physical symptoms may be especially important to consider for certain anxiety and somaticizing disorders (Muris, Mayer, Vermeulen, & Hiemstra, 2007). With respect to specific patterns of negative cognitions and impaired decision making, combinations of hypervigilance for threat and self-doubt lead to "a *hesitant*, *risk-averse*, and *self-deprecating* decision-making style" (Sonuga-Barke et al., 2016, p. 335, italics in original). Broad impairments in executive functioning may be especially important to consider in children and adolescents with OCD (de Bruin, Muris, & Rassin, 2007; Snyder et al., 2015).

Anxiety sensitivity may further complicate cognitive processing, as well as interfering with effective emotion and behavioral regulation (Knapp et al., 2016; Weems, Taylor, Marks, & Varela, 2010). To the extent that children and adolescents are predisposed to immediately focus on and overreact to uncomfortable body sensations, high levels of anxiety sensitivity may be conceptualized as a diathesis; coupling this diathesis with significant or multiple stressors may explain the development of panic disorder or somatic symptom disorder in some youth.

Early experiences with control, and lack of control, may contribute to a lack of security and a cognitive predisposition to assume that one cannot control events or outcomes; this predisposition underlies a sense of helplessness and increases a child's general vulnerability (Weems & Silverman, 2006). In the integrative model proposed by Weems and Silverman (2006), understanding the relations between control and anxiety disorders involves clearly describing the kinds of control that children and adolescents actually have, as well as their perceptions of control.

The fact that these kinds of experiences occur in certain developmental periods is important. According to Pynoos, Steinberg, and Piacentini (1999, p. 1550), “the peak incidences (and surprisingly high prevalence) of serious near-drownings, burns, and dog bites are between infancy and five years of age” and underlie a number of neurobiologically based cognitive changes in children. Intolerance of uncertainty has been documented to increase levels of adolescent worry; given the unsettled nature of adolescence, this may be particularly problematic (Laugesen, Dugas, & Bukowski, 2003).

Behavioral models of risk and psychopathology emphasize that children’s learning is at the root of anxiety. Rachman’s (1977) theory of fear acquisition presented three pathways to disorder: direct conditioning, modeling, and/or instruction or information. There are data to support both direct and indirect pathways (Vasey et al., 2014). Contemporary explanations of behavioral risk also include aspects of neuropsychology and temperament (Mineka & Zinbarg, 2006; Rapee et al., 2009).

Insecure attachments lead to both short- and long-term outcomes involving anxiety disorders (Elizabeth, King, & Ollendick, 2004; Lewis-Morrarty et al., 2015; Nolte, Guiney, Fonagy, Mayes, & Luyten, 2011; Vasey et al., 2014). The heightened risk involves not only more frequent experiences of anxiety, but difficulties engendered by the caregiver’s problematic and often ineffective attempts to manage the child’s distress. Although children with histories of resistant attachment, avoidant attachment, and disorganized attachment are all at increased risk, children with disorganized attachments appear to be at greatest risk; clinical disorders are more likely when these insecure attachment-related risks are combined with other risk factors (Kerns & Brumariu, 2014).

The complex psychological construct of affectivity is the basis of the *tripartite model of anxiety and depression* (Clark & Watson, 1991). The model’s three core concepts are as follows: (1) anxiety and depression share a common causal factor of negative affectivity; (2) along with negative affectivity, low levels of positive affectivity are associated with depression; and (3) along with negative affectivity, high levels of physiological arousal are associated with anxiety. Recent work on comorbidity models for anxiety and depression in youth compared three models (Cohen, Young, Gibb, Hankin, & Abela, 2014; see Figure 11:1). In both the causal model and the correlated liabilities model, there are independent pathways to both anxiety and depression. Evidence from a longitudinal study supports the diathesis-anxiety model. In this model, children and adolescents diagnosed with anxiety disorders go on to develop depression “if they also tend to ruminate or be self-critical” (Cohen et al., 2014, p. 26). These results highlight that anxiety is a risk factor for depression, but depression is not a risk factor for anxiety.

Although discussion of etiologies necessarily emphasizes risk factors, a number of protective factors may buffer children and adolescents. These include the temperamental characteristic of effortful control, a child’s sense of perceived control and self-efficacy, parental support, and experiences connected to religiosity and school satisfaction (Muris, 2006; Smokowski, Shenyang, et al., 2014). Friendships may also protect anxious children from rejection and other peer difficulties (Degnan et al., 2010).

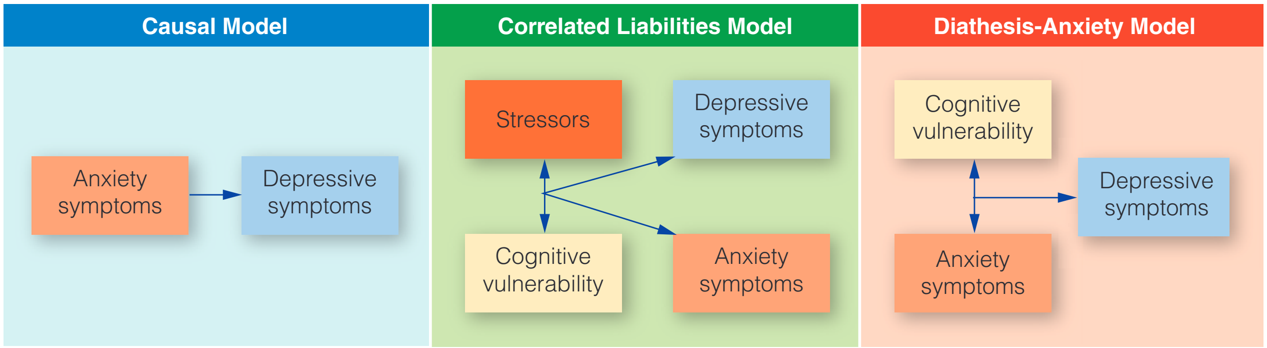

FIGURE 11:1 Three competing models for depression and anxiety in children and adolescents.

Source: Cohen et al. (2014). Why are anxiety and depressive symptoms comorbid in youth? A multi-wave, longitudinal examination of competing etiological models. *Journal of Affective Disorders, 161,* 22.

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Parent Factors

The family context in which children's genetic inheritance and psychological makeup is embedded is critical to the development of anxiety-based disorders. The transactional approach to psychopathology, discussed in many other chapters, emphasizes the connections among child variables, parent and relationship variables, and larger ethnic and cultural variables (Hughes, Hedtke, & Kendall, 2008; Suarez-Morales & Bell, 2006; Vendlinski, Silk, Shaw, & Lane, 2006). Parental psychopathology is associated with increased vulnerability (Colletti et al., 2009; Knappe et al., 2009). Two types of parenting have been identified as risk factors: overprotective/overcontrolling parenting and negative/critical parenting; the most consistent results and the largest effects are observed for overprotective/overcontrolling parenting (Rapee et al., 2009). A related construct, intrusive and controlling parenting, is also linked to child anxiety. Combined with insecure attachments, insensitive parenting is especially problematic (Degnan et al., 2010).

The impact of fathers, distinct from mothers, is important. Numerous studies have shown that fathers' roles involve challenges, risk taking, and encouraging independence; these activities support overall well-being (Bogels & Phares, 2008). Fathers' control, lack of affection, problematic parenting, and psychopathology are all associated with anxiety in children (Bogels & Phares, 2008). Parenting behaviors and styles must be understood in cultural contexts. In communities and cultures where controlling behavior is more frequent and widely accepted, it is less predictive of children's anxiety (Varela & Hensley-Maloney, 2009; Varela, Sanchez-Sosa, Biggs, & Luis, 2009).

Parent fears and worries, modeling of avoidant behavior, and acceptance or accommodation of children's anxiety and avoidance are all potentially related to both the development and the maintenance of anxiety disorders and OCD (Kraper et al., 2014; Rapee et al., 2009; Vasey et al., 2014). Parents contribute to several anxiety trajectories (Vasey et al., 2014). Parents may socialize their children to view the world as dangerous and children themselves as unable to cope. Anxious parents may model anxiety and avoidance. Parents may respond to child anxiety in ways that maintain or increase anxiety and avoidance. These parenting factors may be more salient for temperamentally sensitive or hypervigilant children (Vasey et al., 2014). Individual and family dynamics are embedded into particular cultural contexts, which help to explain the presentation, course, and treatment of anxiety disorders (Essau, Anastassiou-Hadjicharalambous, Demetriou, & Pourseied, 2013; Smokowski, Rose et al., 2014).

Social and Environmental Factors

Adverse life events experienced by children also influence risk and vulnerability. Loss of parents, parental divorce, and maltreatment all increase the risk for the development of anxiety disorders (Beesdo et al., 2009). Particular types of events, such as threat or loss, are differentially associated with the development of anxiety or depression, but other types of uncontrollable events may be linked to specific anxiety subtypes (Beesdo et al., 2009; Vasey et al., 2014). Chronic stressors such as discrimination, schoolwork, family problems, and friendship problems have also been identified as both syndrome specific (tied to either anxiety or depression) and child specific (related to nonshared environmental causes) (Asbury, Dunn, Pike, & Plomin, 2003; Szalacha, Marks, Lamarre, & Coll, 2003).

Relationship risk factors, including peer rejection and victimization, appear particularly salient for the development and maintenance of social anxiety (Gazelle, 2013; Vasey et al., 2014). Interactions of stressors with genetic or physiological vulnerability are the focus of many research efforts. Investigations have examined connections between HPA-axis genetic variation and life stress (Pagliaccio et al., 2015), negative affectivity, effortful control, and life stress (Gulley, Hanking, & Young, 2016) and cortisol response and stress (Ruttle, Armstrong, Klein, & Essex, 2014).

Assessment and Diagnosis

There are two main tasks of assessment: (1) to determine whether children's anxiety reflects typical or atypical adjustment, and (2) to discriminate among anxiety disorders. Comprehensive assessment includes interviews, self-reports, rating scales, physiological assessments, and clinical observations, and evidence-based assessment is increasingly emphasized (Hunsley & Mash, 2007; Rapee & Sweeney, 2005; Silverman & Ollendick, 2005; Southam-Gerow & Chorpita, 2007).

There are self-report questionnaires for many different types of anxiety disorders in children and adolescents. Many of these questionnaires allow mental health professionals to differentiate between anxiety and mood disorders, as well as among anxiety subtypes (Brotman, Kamboukos, & Theise, 2008; Muris, Merckelbach, Ollendick, King, & Bogie, 2002). For younger children, narrative stories may be used to elicit anxiety themes (Warren, Emde, & Sroufe, 2000). Parent and teacher forms of anxiety rating scales are also used frequently (Aschenbrand, Angelosante, & Kendall, 2005; Kendall et al., 2007; Nauta et al., 2004). In addition, parent attitudes and expectancies can be assessed (Eisen, Spasaro, Brien, Kearney, & Albano, 2004). A developmental systems framework focused on child–family transactions may be useful as well (Hunsley & Mash, 2007).

Even with abundant data, interpretation is often difficult. That's because agreement between children's reports and parents' reports of anxiety symptoms and avoidant behavior is usually poor (Hoffman & Chu, 2015; Meiser-Stedman, Smith, Glucksman, Yule, & Dalgleish, 2007). Discrepancies among parent, teacher, and clinician ratings of adolescent disorders have also been reported, and these discrepancies are associated with poor outcomes (Ferdinand, van der Ende, & Verhulst, 2004; Hoffman & Chu, 2015). Reasons for lack of agreement include children's abilities (or inabilities) to describe their anxiety, children's willingness (or lack of willingness) to disclose their anxiety, parental awareness (or lack of awareness), parental distress, and parental motivations; these reasons underscore the need to gather data from both children and parents (Wren, Bridge, & Birmaher, 2004; Youngstrom, Findling, & Calabrese, 2003, 2004).

Especially when making decisions about internalizing disorders, clinicians also need to take into account the cultural backgrounds of children and their families (Garralda & Raynaud, 2008; Varela et al., 2004). Finally, as with every disorder, it is important to take into account a child's strengths and resources (Beaver, 2008). These positive characteristics remind the clinician (as well as parents and teachers) that children are more than their disorders. Further, these positive characteristics may be incorporated into a treatment plan that maximizes therapeutic engagement.

Assessment and diagnosis of obsessive-compulsive disorder, as with anxiety disorders, must take into account typical development, such as the routines and rituals of young school-aged children (Kraper et al, 2014). Structured interviews and child and parent reports are all part of a comprehensive clinical intake. Assessment of OCD severity and impairment must be addressed. Comorbid and differential diagnoses are likely to focus on tic disorders, anxiety disorders, and autism spectrum disorder (Lewin & Piacentini, 2010).

Perhaps more than any other physical or psychiatric diagnosis, somatic symptom disorders require an integrated approach involving combined medical and psychological perspectives. The critical starting point is to rule out known physical causes. In pediatric settings, high rates of medically unexplained symptoms should prompt physicians to explore internalizing psychopathologies (Dhossche, van der Steen, & Ferdinand, 2002; Gledhill & Garralda, 2006). This can then be followed by a consideration of how well the symptoms meet the criteria for a somatic symptom disorder (Meesters, Muris, Ghys, Reumerman, & Rooijmans, 2003), although it is again important to understand symptoms in the context of culture (Varela et al., 2004).

Because the child, and often the family as well, have a considerable psychological investment in the physical symptoms, both are likely to respond with frustration and even distrust when confronted by an inadequate medical explanation. Also, these children and adolescents are, by definition, resistant to an attribution that focuses on emotional functioning. Consequently, they are unlikely to accept a referral for psychological intervention. At least for the more severe somatization cases, then, collaboration between the psychologist and pediatrician is crucial.

Intervention

As with all psychopathologies, the prevention or reduction of anxiety disorders is the goal of mental health professionals. A number of prevention programs have demonstrated success, and new ideas related to prevention are also promising (Dadds & Roth, 2008; Rapee, Kennedy, Ingram, Edwards, & Sweeney, 2010; Vasey et al., 2014). These programs have been implemented in preschools and elementary schools. One relatively low-cost program involves identifying inhibited preschoolers in a day care setting and providing a brief, six-session parenting intervention designed to reduce anxiety disorders (Mihalopoulos et al., 2015). When prevention is not possible, early interventions become very important, not only for the immediate relief of symptoms, but also for the reduction of later disorders such as depression.

Psychological Treatment

Given the nature of internalizing disorders, many children and adolescents become the focus of intervention efforts only after an anxiety disorder is firmly rooted; many others who struggle remain undiscovered and untreated. Effective treatments for the wide range of anxiety disorders are available (Higa-McMillan, Francis, Rith-Najarian, & Chorpita, 2016; Vasey et al., 2014).

The treatment of choice is clearly cognitive-behavioral therapy. **Cognitive-behavioral therapy (CBT)** is based, in large part, on the work of Phillip Kendall and his colleagues (e.g., Albano & Kendall, 2002; Kendall, 2012) and is associated with both immediate and long-term improvements. Both individual and group formats do very well. CBT is also helpful for children who have been diagnosed with anxiety and additional internalizing or externalizing disorders (Higa-McMillan et al., 2016). Relaxation training is often a key component of CBT.

Internet-based treatments, with various educational and experiential components presented in interactive formats, have also been effective and are well received by both children and parents (Elkins, McHugh, Santucci, & Barlow, 2011; Spence, Holmes, March, & Lipp, 2006). For children and adolescents whose anxiety has interfered with the development of age-appropriate and rewarding peer relationships, social skills interventions may be especially important (Kingery et al., 2010).

School-based interventions are another promising option; relaxation exercises, for example, have had positive impacts when taught to groups of children with asthma, as well as entire classrooms (Bernstein, Layne, Egan, & Tennison, 2005). Summer programs with camp-based activities are another option (Santucci et al., 2015). Overall, much progress has been made to make sure that effective interventions are transportable from the university clinic to the community clinic and beyond (Elkins et al., 2011; Higa-McMillan et al., 2016).

For children and adolescents with OCD, exposure and response prevention treatments are the standard evidence-based interventions (Kraper et al., 2014). Indeed, parents show a clear preference for exposure and response prevention treatments compared to treatments that combine exposure and response prevention with medications or to medications alone (Lewin, McGuire, Murphy, & Storch, 2014). These findings are consistent with earlier research on parent preferences for treatments for child anxiety (Lewin et al., 2014).

Summarizing dozens of investigations, Velting, Setzer, and Albano (2004) have identified the six main components of effective CBT: (1) psychoeducation, (2) somatic management, (3) cognitive restructuring, (4) problem solving, (5) exposure, and (6) relapse prevention (see Table 11:6). *Psychoeducation* involves providing children and their families with information about typical anxiety and the emergence and maintenance of pathological anxiety, as well as about theoretical and practical aspects of CBT. *Somatic management* involves targeting the distressing physiological symptoms and is usually focused on relaxation and breathing techniques. In addition, children and adolescents learn how to predict and tolerate the anxiety that accompanies challenging and stressful events. *Cognitive restructuring* has to do with the identification and modification of negative thoughts that elicit and prolong anxiety. Thinking about emotions and emotional biases also may be important and is the focus of treatment efforts in some instances. *Problem solving* is a step-by-step, active, behaviorally oriented approach for coping. *Exposure* to the stimuli and situations that are associated with anxiety is systematic and controlled, with *in vivo* (real-life) practice preferred. *Relapse prevention* involves laying the groundwork for the maintenance and generalization of improvements.

With all CBT treatments, the therapeutic alliance and developmental considerations in the design and implementation of all aspects of individual interventions must be emphasized. It is important to note that positive child treatment outcomes often include *spillover effects*, improvements in parent functioning, parent-child relationships, and family functioning, in addition to improvement in child and adolescent functioning (Keeton et al., 2013). Further, there is strong evidence that the short-term benefits of CBT extend into the young adulthood years (Saavedra, Silverman, Morgan-Lopez, & Kurtines, 2010).

Given the salient role of the parents in etiology and maintenance, it makes sense to work within a treatment framework that includes parents and recognizes the impact of culture on parents (Barrett & Shortt, 2003;

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Cognitive-behavioral therapy approaches, such as the Coping Cat program, have been adapted for use in treating childhood anxiety disorders.

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TABLE 11:6 Main Components of Cognitive-Behavioral Therapy

COMPONENTS	FOCUS/GOALS	ASSOCIATED TECHNIQUES
Psychoeducation	Provide corrective information about the nature of anxiety and feared stimuli	Didactic instruction, self-monitoring (diaries), and assigned reading
Somatic management	Target autonomic arousal and related physiological symptoms, focus attention away from anxiety-arousing physical sensations, break the association between physiological arousal and anxiety	Breathing retraining (deep and slow diaphragmatic breathing), relaxation training (progressive muscle/cuecontrolled/applied relaxation), meditation, and exercise
Cognitive restructuring	Identify maladaptive (i.e., unhelpful) thoughts, beliefs, and images, and teach realistic, coping-focused thinking	Monitoring of thought processes (diaries), identification of automatic thoughts, teaching rational disputation of automatic thoughts, use of behavioral experiments to gather evidence to refute automatic thoughts, and use age-appropriate methods for younger children
Problem solving	Develop a variety of active methods for coping with specific problem situations and a system for testing the potential solutions	Identify the specific problem, generate multiple alternative actions for improving the situation, explore costs and benefits of each potential solution, determine and implement the preferred or most feasible alternative, and evaluate outcomes
Exposure	Graduated, systematic, and controlled exposure to feared situations to provide experience at using anxiety management skills and consolidation of psychoeducation material	Behavioral exposure to feared situations, interoceptive exposure to feared bodily sensations (such as in panic disorder), exposure should be direct (*in vivo*), but may begin with imaginal or symbolic exposure (e.g., use of photos of the feared object instead of actual stimulus)
Relapse prevention	Focus on consolidating anxiety management skills and generalizing treatment gains over time, and decrease reliance on therapist and others (e.g., parents) for managing anxiety	Fading of sessions (from weekly to biweekly), role reversal (child acts as therapist for a session), videotape commercial of therapy program, and planned booster sessions

Source: From Velting et al. (2004).

Kendall, 2012). Family approaches to anxiety disorders are often used and are often very effective (Ginsburg & Schlossberg, 2002; Weisz, 2004; Wood, Piacentini, Southam-Gerow, Chu, & Sigman, 2006). In particular, treatments for OCD that address family conflicts, parent accommodation of the child's coercive behavior, and poor family cohesion are associated with better outcomes (Kraper et al., 2014; Lebowitz et al., 2011; Peris et al., 2012). Family approaches are also highly effective for somatic symptom disorders (Garralda, 2010).

Designing various treatments for several of the children described earlier in the chapter provides examples of these psychological treatments. To help Sophie with her separation anxiety disorder and school refusal, it was important to first clarify for her parents and family that it was not school that was upsetting Sophie. Rather, anxiety about separating from her mother was interfering with her entry into first grade. Consequently, intervention efforts were aimed at restoring Sophie's confidence in her relationship with her mother, as well as her own self-confidence (see also Heyne et al., 2002). To help with the transition to a calmer start to the school day, a picture of her mother was taped to the inside of her desk as a reminder that her mother was fine and would be waiting for her at home at the end of the day. For several days, Sophie was also allowed to call her mother after lunch if she wished. By the end of four weeks of these efforts, Sophie was again looking forward to her school day and separated from her mother easily in the morning.

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For Jack's dog phobia, any of four classic behavioral treatments for fears (or combinations of these treatments) might be used, including modeling, systematic desensitization, reinforced exposure, and self-talk (Weisz, 2004), with attention paid to the individual response pattern and developmental status (Davis & Ollendick, 2005; King et al., 2005; Muris, 2006). **Modeling** treatments are based on the impact of observational learning. With this approach, Jack might participate in symbolic modeling (using videos of children displaying nonfearful behavior), live modeling (using in-person observation of nonfearful children), or participant modeling (pairing Jack with a nonfearful child). Depending on the child, modeling treatments may achieve good outcomes quite quickly. **Systematic desensitization** involves teaching an anxious child how to relax and how to maintain relaxation when exposed to the feared stimulus. Exposure is done gradually (i.e., systematically, from stuffed dogs to videos of dogs to real dogs), building on the child's successes over time. **Exposure** involves rewarding a child for desired behavior. In Jack's case, he might receive tokens for more functional dog-related behaviors. **Self-talk** is a cognitive technique focused on providing positive self-statements such as "I am brave," to enhance appropriate behaviors. All these treatment approaches depend on establishing a trusting relationship with a therapist because children need to believe (and feel deep down) that this adult will keep them safe.

Chloe, the girl diagnosed with generalized anxiety disorder, needed to spend several sessions becoming accustomed to, and comfortable with, the therapeutic setting, the therapist, and the therapeutic relationship. Chloe and her parents discussed the age-related expectations and tasks that were important to her and the ways that it would be advantageous (and even fun) to meet them. She spent many of the sessions engaged in role playing and practicing self-talk strategies that would help her manage her base levels of anxiety and her specific anxiety symptoms.

Danny, who struggled with OCD, received an intervention that first involved education for him and his parents about the disorder. During these discussions, Danny's father also revealed that he had experienced a variety of significant anxiety symptoms, including some marginal obsessive-compulsive behaviors, as well. A cognitive-behavioral treatment plan was developed, and a referral for a medication consultation was made. Cognitive techniques were used to identify patterns of thoughts and behaviors that had become maladaptive and new, more effective strategies for dealing with anxiety were developed. Behavioral plans to limit compulsive behaviors were also created, including techniques that exposed Danny to triggering stimuli while preventing the compulsive response. In this way, he became desensitized to anxiety-provoking stimuli and no longer felt the urgent need to engage in the compulsive behaviors.

After several meetings with Isabella and her parents, the hospital team working with her diagnosed a somatoform pain disorder. In discussing this with Isabella and her parents, it was emphasized that no one thought that she was "faking." Rather, the facts that Isabella very much wanted to do well in high school and also please her parents were noted, and the suggestion was made that although Isabella was not feeling directly anxious about this, the pressure to perform had begun to interfere with her ability to manage her daily demands. As part of this suggestion, the therapist mentioned that there were many ways in which bodies and minds work together, in both positive and negative ways. A plan was developed with input from the family, physician, and psychologist, in which medical monitoring would be combined with help from the psychologist in Isabella returning to school. It was emphasized that although they would continue to investigate physiological factors, the most truly dangerous possibilities had already been ruled out, and it was medically safe for Isabella to return to school. Gradually, the psychologist helping her became more involved in coaching her to develop more adaptive and effective ways of managing stress in her life. Mind–body pain management strategies were an important component of ongoing treatment.

Pharmacological Treatment

Many effective treatments combine psychological and pharmacological techniques, with anxiety medications prescribed most frequently for children and adolescents with anxiety disorders and obsessive-compulsive disorder (March, Entusah, Rynn, Alvano, & Tourian, 2007; Walkup et al., 2008). Although much more research work remains to be done, these combined therapies seem especially appropriate for older children and those with more severe symptoms, as well as for complex cases that involve comorbidity. In the future, it is likely that the recent growth in the pharmacological treatment of anxiety disorders in young people will become more refined as a result of ongoing clinical trials of medications that include children and adolescents. Advances in imaging research, such as functional magnetic resonance imaging (fMRI) techniques, will also likely provide a more precise understanding of the brain mechanisms and brain activity that are implicated in the development of anxiety disorders. These kinds of advances will also improve the precision with which medications are prescribed for children (Storch & McKay, 2010). But even with such improvements, it is important to keep in mind that cognitive-behavioral psychotherapies will continue to play a central role in providing the most effective treatment strategies for helping children cope with anxiety.

Key Terms

Emotion regulation (p. 195)
Fears (p. 195)
Worries (p. 195)
Anxiety disorders (p. 196)
Anxiety sensitivity (p. 197)
Separation anxiety disorder (p. 199)
Phobic disorders (p. 199)
Specific phobias (p. 199)
Social phobia (p. 199)
Agoraphobia (p. 199)
Generalized anxiety disorder (p. 201)
Panic disorder (p. 202)
Obsessive-compulsive disorder (p. 202)
Obsessions (p. 203)
Compulsions (p. 203)
Somatization (p. 204)
Somatic symptom disorders (p. 204)
Conversion disorder (functional neurological symptom disorder) (p. 204)
Homotypic continuity (p. 204)
Heterotypic continuity (p. 205)
Cognitive-behavioral therapy (CBT) (p. 211)
Modeling (p. 213)
Systematic desensitization (p. 213)
Exposure (p. 213)
Self-talk (p. 213)

Chapter Summary

- Although some fears and worries are a typical and expected part of childhood, when they consistently interfere with healthy development, an anxiety disorder may be present.
- Emotional regulation (ER), the ability to modulate and organize emotions, follows a developmental course that must be considered when determining whether typical anxiety crosses over to pathological anxiety.
- Anxiety disorders represent the maladaptive experience of anxiety in terms of intensity, duration, and pervasiveness. They are also characterized by inhibition and withdrawal, exaggerated and unrealistic fears and worries, and overcontrol. Anxiety disorders are among the most frequently diagnosed disorders in children, adolescents, and adults.
- Some of these disorders, such as generalized anxiety disorder (GAD), represent an anxious reaction to a wide array of stimuli, whereas others, such as separation anxiety disorder (SAD) and specific phobias, are rooted in more specific anxiety-producing situations.
- In some anxiety disorders, including obsessive-compulsive disorder (OCD) and conversion disorder, the behaviors used to block the direct experience of anxiety (i.e., avoidance) are the primary symptoms.
- Somatic symptom disorders involve the experience of physical symptoms that appear related to the moderation of emotions, especially anxiety. Anxiety sensitivity is often exhibited.
- Genetic and other physiological risk factors are clearly linked to the development of anxiety disorders. Research suggests that anxiety and mood disorders result from closely related risk factors.
- Parenting behaviors that may potentially contribute to the development of anxiety disorders include an anxious style of parenting, such as overinvolvement and overprotection, as well as the modeling of anxious and avoidant behavior.
- One of the assessment challenges with regard to anxiety disorders is the fact that agreement between parents' and children's reports of anxiety symptoms is relatively low.
- Comprehensive assessment, including clinical interview, self-report measures, and clinical observations, are used to differentiate typical from pathological levels of anxiety and discriminate among anxiety disorders.
- A variety of psychological interventions (cognitive-behavioral therapy in particular), often in combination with pharmacological approaches, have proven effective in the treatment of anxiety disorders.

12 Depressive Disorders, Bipolar Disorders, and Suicidality

CHAPTER OUTLINE

Developmental Tasks and Challenges Related to the Construction of Self and Identity

Depressive Disorders
- *The Case of Rebecca*
- *The Case of Sam*
- *The Case of Zoey*
- **BOX 12:1 RISK AND RESILIENCE:** Gender Differences in Depression in Adolescence
- *The Case of Marcus*

Bipolar Disorders

Developmental Course
- Continuity of Depressive Disorders
- Comorbidity across Time
- Continuity of Bipolar Disorders

Etiology
- Depressive Disorders
- Bipolar Disorders

Assessment and Diagnosis
- Assessment and Diagnosis in Children
- Assessment and Diagnosis in Adolescents

Intervention
- Pharmacological Treatment
- Child Treatment
- Family Treatment
- Prevention Efforts

Suicidality
- **BOX 12:2 CLINICAL PERSPECTIVES:** Self-Harm in Adolescence

THERE ARE MANY MYTHS about depression in children. Some people believe that children cannot experience genuine depression. But children can. Some people believe that, even if children can be clinically depressed, few are. But depression in children is not rare. Others believe that childhood depression is short lived or a typical developmental phenomenon. It is neither. Depression is a common and serious psychopathology with lasting negative consequences; it is underrecognized and undertreated in both children and adolescents. Our goal for this chapter is to provide an up-to-date overview and a compassionate analysis of depressive disorders, bipolar disorders, and suicidality in children and adolescents.

Developmental Tasks and Challenges Related to the Construction of Self and Identity

Given the myriad physiological, psychological, and social changes associated with the transition from late childhood to adolescence, the development of a coherent *sense of self* (i.e., "the set of attributes, abilities, attitudes, and values that an individual believes defines who he or she is"; Berk, 2009, p. 451) and a *positive identity* (i.e., an individual's understanding, acceptance, and prizing of his or her self, roles, relationships, and responsibilities) becomes critical for ongoing healthy adjustment (Call & Mortimer, 2001); well-differentiated and integrated experiences of self and identity underlie all of the various types of autonomy and achievement that adolescents seek (Harter, 1999, 2003; McLean, Syed, & Shucard, 2016). Indeed, according to the pioneering lifespan developmental psychologist Erik Erikson (1968), developing a mature psychological identity is the primary achievement of adolescence.

The construction of self is a process that begins in infancy and stretches across a lifetime. This construction is an individual achievement, but one that is accomplished within a particular family, in a particular culture, and in a particular era. The convergence of such late-childhood challenges as puberty, academic demands, romantic involvements, and vocational interests means that the constructs of self and identity become increasingly important in adolescence. One important factor that requires emphasis is that older children and adolescents are increasingly active agents in their own development. That is, they are more likely than younger children to influence their development by selecting their environments (e.g., peer groups and peer activities) and then taking advantage of opportunities or compensating for challenges and risks (Gestsdottir, Lewin-Bizan, von Eye, Lerner, & Lerner, 2009; Hollenstein & Lougheed, 2013). A key component of this developmental process involves adolescents' abilities to cope with increases in both daily hassles (e.g., homework difficulties, disagreements with siblings) and larger stressors (e.g., financial responsibility, career planning). In the absence of psychopathology, children's and adolescents' experiences of sadness, frustration, and anger are responses to particular problematic or painful situations. For most children and adolescents, the experience of these negative emotions supports the acquisition of various and flexible coping strategies (e.g., talking over problems, changing behaviors, avoiding conflict) that are more likely to result in positive outcomes (Compas, 1987; Compas, Malcarne, & Fondacaro, 1988). But for other children and adolescents, as a result of biological predisposition and/or traumatic experience, such negative emotions can become predominant, diminishing self-esteem and contributing to a negative self-identity and the emergence of mood disorders.

In earlier chapters, we have discussed *domains of competence* as areas of challenge and resolution that have an impact on the ways in which children perceive themselves. Researchers have described domain categories—including academics, behavior and conduct, and friendships—that have an impact on younger children's developing sense of self. Others have identified domains related to sports and appearance. In adolescence, additional domains such as romantic relationships and the world of work emerge (Arnett, 2000; Roisman, Masten, Coatsworth, & Tellegen, 2004). We do not expect that children and adolescents exhibit similar achievements in each and every domain at the same time. Some kids excel in sports early and display academic accomplishments later. Other kids become more socially skilled and socially comfortable as they age.

Domains involve multiple tasks, with their own patterns of "emergence, ascendancy, and decline" (Roisman, Masten, Coatsworth, & Tellegen, 2004, p. 123). Adolescents can be characterized as more or less comfortable in each important domain of development, and, during adolescence, domains related to academics, friendships and relationships, and appearance all become increasingly salient (Arnett, 2000; Hollenstein & Lougheed, 2013; Roisman et al., 2004). *Arenas of comfort* are the domains in which adolescents express relative satisfaction with themselves and their accomplishments. These arenas include family comfort, peer comfort, school comfort, and work comfort (Call & Mortimer, 2001). For instance, some adolescents who value relationships may spend time and effort developing multiple connections with others; peer success is tied to a sense of one's worth. Other adolescents focus on academic achievement and school activities, and these successful experiences enhance well-being (Call & Mortimer, 2001). Typically developing adolescents experience comfort in at least one arena, and two-thirds report feeling comfortable in two or more arenas. Comfort appears to increase slightly over the course of adolescence and varies by gender, ethnicity, and socioeconomic status (SES).

There are important connections between arenas of comfort and the adolescent's sense of self and identity. First, participation in multiple arenas is associated with an adolescent having more chances to experiment with identities and skills, and these chances are tied to increased opportunities for success and enhanced esteem (Barber, Stone, Hunt, & Eccles, 2005; Eccles, Roeser, Vida, Fredericks, & Wigfield, 2006). It is important, however, to balance changes in various arenas because some adolescents may be overwhelmed if change occurs in every domain simultaneously (Costa et al., 2005). Another connection involves the degree of commitment to a particular identity or arena (Barber, Eccles, & Stone, 2001). An adolescent who plans a career in theater may feel especially proud of a leading role in a school play; another adolescent whose parents were immigrants may seek an internship focused on immigration reform or international economics.

For both domains of competence and arenas of comfort, evidence of individual achievement and the accompanying respect and/or liking of peers contribute to a sense of competence, positive self-esteem, and rewarding social relationships that serve as protective factors. In the same way that developmental cascades have been described for various psychopathologies and for poor outcomes, a developmental cascade model can describe how one good thing leads to another, with interactive and expanding effects for positive outcomes for children and adolescents (Lewin-Bizan, Bowers, & Lerner, 2010). In contrast, lack of success in valued domains, lack of confidence in one's abilities, and feelings of social isolation may predispose a child or adolescent to a preponderance of negative emotions and negative moods; these are risk factors for current and later maladjustment.

Over the years of adolescence, most typically developing individuals come to construct a coherent autobiography (McLean & Pasupathi, 2010). Habermas and Bluck (2000) refer to this emergence of one's story as "getting a life," and emphasize that it depends on certain cognitive and social advances. Weaving together personal events (e.g., idiosyncratic family relationships) with normative cultural events (e.g., religious milestones or graduation from high school) and making sense of both continuity and discontinuity in personality are complicated tasks. The development of a life story may have particular significance for those who have struggled with psychopathology as children and for those who struggle during adolescence. As we move into a discussion of mood disorders, we will need to think carefully about the many meanings of psychopathology and how they fit (or do not fit) into developing life stories.

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As with adults, sad mood and loss of pleasure are primary characteristics of depression in children and adolescents.

Depressive Disorders

There are many excellent reviews of mood disorders in children and adolescents that provide important historical perspectives (Cicchetti, Rogosch, & Toth, 1997; Garber, 2007). These reviews refute earlier theoretical models proposing that children lacked the necessary psychological structures and processes to experience adultlike depression, and later beliefs that children's depression was often "masked" by irritability and aggression. The reviews also recall the poignant observations of René Spitz (1946), who described long-hospitalized infants displaying sadness, withdrawal, developmental delays, and maladaptation. These reviews also describe contemporary conceptualizations of children's mood disorders. Against the background of children's rapid developmental growth and change, researchers and clinicians agree that it is useful to think about a *mood-related continuum* (i.e., a range of distress and impairment) (Hankin, Fraley, Lahey, & Waldman, 2005) and to distinguish among children and adolescents who exhibit periods of sadness, irritability, or both; those who struggle with longer episodes of depression and dysfunction; and those who are appropriately diagnosed with clinically significant mood disorders.

The Case of Rebecca

Rebecca is an eight-year-old girl referred by her parents and pediatrician. Although Rebecca has always been somewhat shy, neither her parents nor the school had any serious concerns until she started third grade. She began to complain about difficulty falling asleep, and her teachers noted that she appeared tired in class. She began to have problems completing homework. Rebecca had been on the volleyball team for the past year; she loved the sport and was an excellent player and popular teammate.

This year, however, she said that she did not want to play because she felt she wasn't very good and that volleyball was "boring."

Rebecca has always been a cooperative child at home, but her parents are distressed by the fact that she has recently become argumentative and irritable. She is easily frustrated and cries often. Recently, Rebecca's mother was looking through her schoolwork and found several notes written by Rebecca saying that she wished she were dead. When confronted with this, Rebecca refused to talk about it and sobbed at her parents that they didn't understand her at all. ■

The Case of Sam

Sam is a nine-year-old boy in the fourth grade referred because of concerns raised by his parents and teachers. Specifically, they describe him as irritable, hypersensitive, and sullen. Standardized testing suggests that Sam has above-average intellectual ability, but he struggles in class. He is easily discouraged and gives up quickly when he does not immediately understand a lesson. In these situations, he sometimes describes the assignments as "stupid," whereas at other times, he says he cannot do them because he is "dumb." Sam tends to play on his own on the playground and generally avoids group activities unless they are organized and supervised by an adult.

Sam's parents note that school reports were generally more positive in his first year or two of elementary school. They say that Sam was often described as bright, active, and friendly. Although he tended to be overly reactive to conflict and limit setting, he had several good friends that he enjoyed playing with during recess, and occasionally outside school as well.

His parents have difficulty pinpointing when his difficult moods began to worsen and linger, but they say that the current problems have been present for at least the past year. Now Sam seems to expect the worst in himself and others, fights frequently with his younger brother, and spends as much time as possible playing video games by himself. School reports make clear that Sam has been struggling behaviorally and socially to a much greater extent than in past years. Sam's parents have tried to talk to him about their concerns, but he rejects the idea that he is having any real difficulties. Sam does say that he is frustrated with what he believes is near-constant nagging by his parents and the annoying behavior of his brother.

At home, Sam's moodiness, negativity, and quick temper are upsetting to his parents. In particular, they are distressed by his severe and frequent temper outbursts. They note that several times a week, Sam will react to some small frustration, request, or correction with verbal (and sometimes physical) rage. At such times, Sam will usually scream at his parents, throw and kick things, and occasionally hit them. Over the years, they have referred to these episodes as Sam's "emotional storms" and assumed that he would outgrow such out-of-control behavior as he got older. The fact that there has been such little change in his temper outbursts is especially discouraging to them and confusing to Sam himself. ■

The Case of Zoey

Zoey is 15 years old and in tenth grade. She has been a good student, though her grades have recently slipped from mostly Bs to mostly Cs. Zoey's guidance counselor met with her after noticing the drop in her grades and hearing that she had quit the school's speech team. Zoey had been an enthusiastic and successful member of the team for her first two years of high school. Her closest friends were on the speech team; after quitting, she has become increasingly withdrawn. After Zoey confided to the counselor that she was crying for no apparent reason and had lost interest in activities she used to enjoy, her counselor spoke to Zoey's parents and suggested that they schedule an appointment with a psychologist.

The psychologist met with Zoey and her parents, both individually and as a family. Her parents described her as an active, social, and fun-loving teenager who enjoyed everything about high school. In addition to speech, she was a member of a number of clubs and community service organizations. Although Zoey liked the activities themselves, it was the opportunity to be with the other kids that seemed to give her the most pleasure. Zoey's parents reported that she was not an especially gifted student, but she was conscientious and worked very hard. Teachers recognized and appreciated this, and Zoey was proud of her B average.

Looking back, her parents noted that things began to change the summer before tenth grade. They recalled that she began to sleep more and more and was much less active during the day. Although she had planned on finding a job at the local mall, she never actually applied anywhere. She seemed to prefer to stay home and watch TV in the evening, and she began to gain weight. At first, her friends called her often, but after Zoey repeatedly declined their invitations, they began to make plans without her. She appeared to regain some energy and enthusiasm when school started, but soon she did poorly on some quizzes and tests and fell behind in her schoolwork. For the first time, she began to complain that the work was too hard and often fell asleep when trying to do homework. When her parents asked if she

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was using drugs, Zoey become extremely angry and agitated. She accused her parents of never trusting her and always being critical.

When informed that her parents had talked about how well the first two years of high school had gone, Zoey seemed surprised and annoyed, saying that she had never liked school or most of the people there. She said she had participated in activities to make her parents happy, but that nothing she did was good enough, so she quit. She talked at length about a group of friends that she felt had turned against her, and also that she felt "different" from the other students. She said that she last remembered being happy "maybe when I was a kid in grade school."

Zoey told the psychologist that she had decided to ask for help because she had begun to experience repeated and intrusive thoughts about dying. She said that she did not have a plan for killing herself, but she was finding it increasingly difficult to manage these feelings of dread. She also said that she felt her guidance counselor was the only person she could really trust. She worried, however, that referring her to a psychologist was the counselor's way of getting rid of her. ■

There are several kinds of child and adolescent mood disorders, with different causes, courses, and outcomes. **Major depressive disorder** in children and adolescents is characterized by sadness and a loss of pleasure and is accompanied by cognitive, behavioral, and somatic symptoms (see Table 12:1). Cognitive symptoms include problems with attention and concentration, rumination, and thoughts of worthlessness and guilt. Behavioral and somatic symptoms include social withdrawal, fatigue and insomnia, and changes in appetite, weight, or both. The case of Rebecca illustrates major depressive disorder in a child, whereas the case of Zoey illustrates major depressive disorder in an adolescent.

Single or repeated episodes of depression in a child can be contrasted with his or her more usual, more adaptive functioning. The average length of episodes of major depression is quite variable, with a median duration of four months for children and two months for adolescents; recurrent episodes are common in both childhood and adolescence (Rohde, Lewinsohn, Klein, Seeley, & Gau, 2013. **Persistent depressive disorder** (formerly called *dysthymia*) involves a long-standing disturbance of mood, with ongoing sadness, irritability, and lack of motivation. Compared to major depressive disorder, individuals with persistent depressive disorder usually display less severe symptoms for longer periods of time. Persistent depressive disorder is underresearched and requires additional child- and adolescent-specific investigation (Birmaher & Brent, 2016).

Although there is much similarity in the clinical presentation of depressive disorders in children and adolescents (and from childhood through adulthood), it is still essential to consider the impact of age and development. Younger children like Rebecca often have a more depressed appearance, display more somatic difficulties and anxiety symptoms, and struggle with externalizing behaviors. Adolescents are more likely to exhibit guilt and hopelessness, substance abuse, psychotic symptoms, and suicidality (Garber & Rao, 2014). Both children and adolescents struggle with rest–activity cycles,

TABLE 12:1 Major Depressive Disorder: Summary of DSM-5 Diagnostic Criteria

A. Five or more of the following symptoms occurring together and representing a change from previous functioning; at least one of the symptoms is either depressed mood or loss of interest or pleasure:

1. Depressed mood most of the day, nearly every day, as indicated by either subjective report or observations made by others.
   Note: In children and adolescents can be irritable mood.
2. Markedly diminished interest or pleasure in most activities, most of the day, nearly every day.
3. Significant weight loss or weight gain, or decrease or increase in.
   Note: In children, consider failure to make expected weight gain.
4. Insomnia or hypersomnia.
5. Psychomotor agitation.
6. Fatigue or loss of energy.
7. Feelings of worthlessness or excessive guilt.
8. Diminished ability to think or concentrate, or indecisiveness.
9. Recurrent thoughts of death, suicidal ideation, or a suicide attempt or plan.

B. Symptoms cause clinically significant distress or impairment in social or other important areas of functioning.

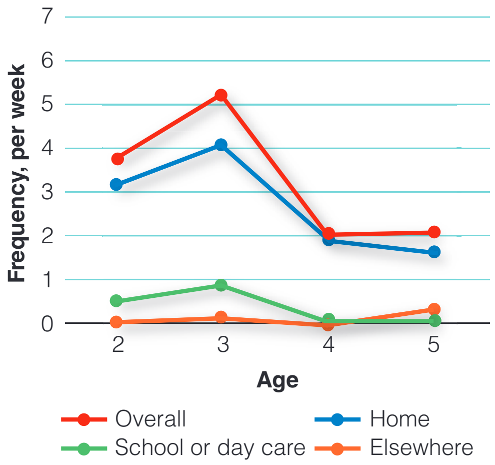
and many of them display sleep disturbances (Alfano & Gamble, 2009; Dahl & Lewin, 2002). Sleep disturbances are worrisome because they have been associated with a more complicated course for depressive disorders and worse outcomes (Gregory & Sadeh, 2015).

With respect to depressive disorders in adolescence, we need to emphasize that even typically developing adolescents experience more extreme moods (especially negative ones) and more mood fluctuations than they did in childhood (Arnett, 1999; Hollenstein & Lougheed, 2013); therefore, it is important to be very careful about identifying a pattern of symptoms that reflects clinically significant distress, dysfunction or impairment, or a pattern that includes subthreshold symptoms (Garber & Rao, 2014; Rohde et al., 2013).

We also need to consider distinctions between an episode of major depressive disorder emerging for the first time in adolescence (that is, as initial psychopathology) and depression that emerges in adolescence following another disorder (that is, as a complicating comorbid disorder). This distinction may have even more relevance given the earlier discussion of the development of self and identity during adolescence. Adolescents diagnosed with depression may have difficulties reconciling joyful and successful childhoods with their current struggles, and may have a much more difficult time constructing a sense of self characterized by self-worth and self-efficacy.

Disruptive mood dysregulation disorder is a new type of depressive disorder introduced in DSM-5. The conceptualization of disruptive mood dysregulation disorder is the result of considerable research and clinical work. This work was related to a set of converging factors, including an earlier broadening of the symptoms (e.g., severe irritability and hyperarousal) used to diagnose bipolar disorder in DSM-IV in children and in adolescents, dramatic increases in the diagnosis of bipolar disorder in children and adolescents, and a lack of continuity observed between clinical presentations in childhood and later in adulthood (Leibenluft & Stoddard, 2013). In addition, important treatment implications related to access to mental health services and medications were taken into account; these will be discussed further in the upcoming intervention section.

Disruptive mood dysregulation disorder involves severe, recurrent temper tantrums that are atypical with respect to intensity and frequency. Between tantrums, the mood of the child is persistently and pervasively irritable or angry. The case of Sam is an example of this disorder. Keep in mind that typically developing children display tantrums. As noted in the description of oppositional defiant disorder in Chapter 10, the key differences in typical versus atypical tantrums relate to the intensity of tantrums, the destructiveness of tantrums, and the difficulty in recovering from tantrums (see Figures 12:1a, 12:1b, and 12:1c). Whereas the overall frequency of tantrums decreases significantly over the preschool



- No gender difference in frequency of tantrums at home
- Boys more likely than girls to have tantrums at school

FIGURE 12:1a Mean frequency of tantrums by age.

Source: From H. Egger (2011). Preschool temper tantrums: What they mean and when to worry. *Presentation to Children's Hospitals and Clinics of Minnesota*, May 12, 2011.

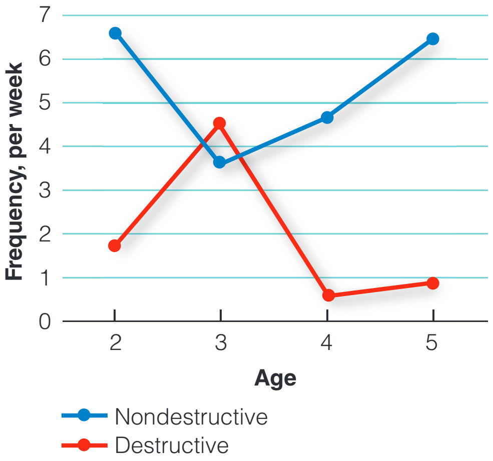


FIGURE 12:1b Relative frequency of destructive and non-destructive tantrums.

Source: From H. Egger (2011). Preschool temper tantrums: What they mean and when to worry. *Presentation to Children's Hospitals and Clinics of Minnesota*, May 12, 2011.

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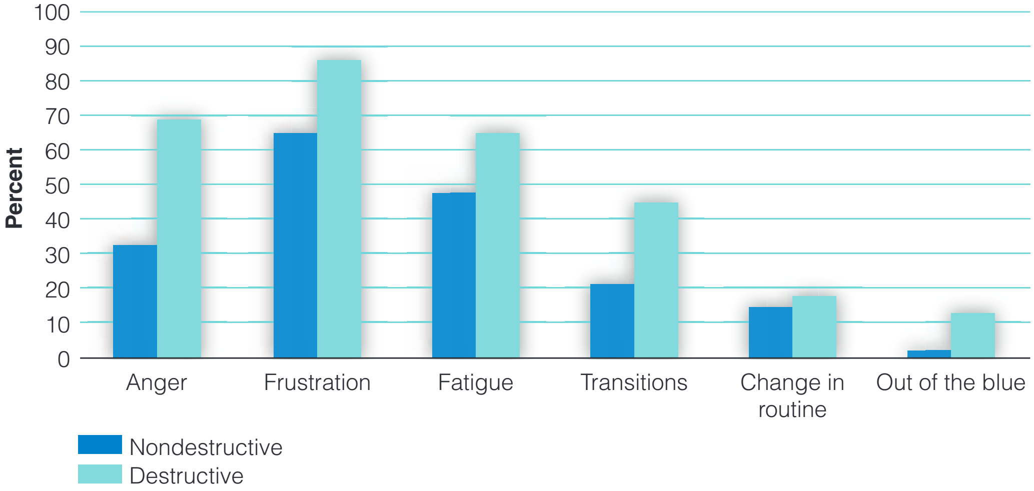

FIGURE 12:1c Triggers of tantrums.

Source: From H. Egger (2011). Preschool temper tantrums: What they mean and when to worry. *Presentation to Children's Hospitals and Clinics of Minnesota*, May 12, 2011.

years, destructive tantrums, when present, increase in frequency between three and five years of age and are strongly associated with later clinical disorders (Egger, 2011; Leibenluft & Stoddard, 2013). Nondestructive tantrums are those that involve, for example, crying, stamping and flailing or holding one's breath. Destructive tantrums include aggression against others or the self (such as hitting, kicking, or biting) or breaking things. The DSM-5 diagnostic criteria specify that the diagnosis should *not* be given to a child younger than six. Although the rationale for this cutoff is not provided in DSM-5, it is likely that this criterion reflects an attempt to emphasize the atypical presentation and associated impairment of high-frequency, destructive tantrums that persist with age and that occur in multiple settings with a variety of other people besides parents (Egger, 2011).

Also, keep in mind that many typically developing children and adolescents are intermittently irritable, and that irritability is observed in a variety of childhood disorders (such as oppositional defiant disorder and the anxiety disorders) (Vidal-Ribas, Brotman, Valdivieso, Leibenluft, & Stringaris, 2016). In disruptive mood dysregulation disorder, the chronic irritability is atypical and is associated with significant impairment (Leibenluft & Stoddard, 2013). Prior to the publication of DSM-5, children who displayed this chronic irritability might have been diagnosed with bipolar disorder. Whereas the earlier set of diagnostic criteria allowed for non-episodic (or chronic) irritability as part of the clinical presentation of bipolar disorder in children, the new diagnosis makes clear that persistent, non-episodic irritability is part of the distinct pattern of difficulties and impairment in disruptive mood dysregulation disorder (see Table 12:2).

Several investigations have estimated that depressive disorders are relatively uncommon in preschoolers and elementary-school-aged children and increase in the following years, from 2% to 3% in 6- to-12-year-olds to 10% to 20% in adolescents (Garber & Rao, 2014). Gender differences in rates of depressive disorders are notable, with gender ratios approximately equal before adolescence; girls' levels of depression increase rapidly in early adolescence (Avenevoli, Swendsen, He, Burstein, & Merikangas, 2015; Essau, Lewinson, Seeley, & Sasagawa, 2010; Garber & Rao, 2014; also see Figure 12:2 and Box 12:1).

The developmental period from late adolescence to early adulthood is another time frame with increases in rates of depression (Rohde et al., 2013). There appear to be cohort differences as well, with clear increases in the rates of depressive disorders in adolescents in the United States and in other high-income countries over the last 30 years (Collishaw, 2015). With respect to ethnic differences, rates appear relatively similar for young people of various backgrounds (Avenevoli et al., 2015). Current research is focused on improved assessment and classification of depression in minority youth (Vaughn-Coaxum, Mair, & Weisz, 2016). Because disruptive mood dysregulation disorder is a relatively new diagnosis, specific rates are difficult to estimate across childhood and adolescence (Birmaher & Brent, 2016).

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TABLE 12:2 Disruptive Mood Dysregulation Disorder: Summary of DSM-5 Diagnostic Criteria

A. Severe recurrent temper outbursts manifested verbally and/or behaviorally that are grossly out of proportion in intensity or duration to the situation or provocation.

B. The temper outbursts are inconsistent with developmental level.

C. The temper outbursts occur, on average, three or more times per week.

D. The mood between temper outbursts is persistently irritable or angry most of the day, nearly every day, and is observable by others (e.g., parents, teachers, peers).

E. Criteria A through D have been persistent for 12 or more months. Throughout that time, the individual has not had a period lasting 3 or more consecutive months without all of the symptoms and criteria A through D.

F. Criteria A and D are present in at least 2 of 3 settings (i.e., at home, school, with peers) and are severe in at least one of these.

G. Diagnoses should not be made for the first time before age 6 years or after age 18 years.

H. Age of onset before 10 years.

The presence of other comorbid disorders is a frequent phenomenon. The most common categories of comorbid disorders include the combination of major depressive disorder with persistent depressive disorder (sometimes called *double depression*), all types of anxiety disorders, attention deficit/hyperactivity disorder (ADHD), substance abuse disorders, and eating disorders (Avenevoli et al., 2015; Rohde, 2009). As noted in Chapter 4, the sequence in which disorders develop is important. For most examples of comorbidity that involve major depressive disorder, the depressive disorder follows the other disorder. For individuals with a comorbid disorder, the duration of a major depressive episode is likely to be longer, episodes of depression are likely to recur, and response to treatment is less favorable (Essau et al., 2010; Garber & Rao, 2014).

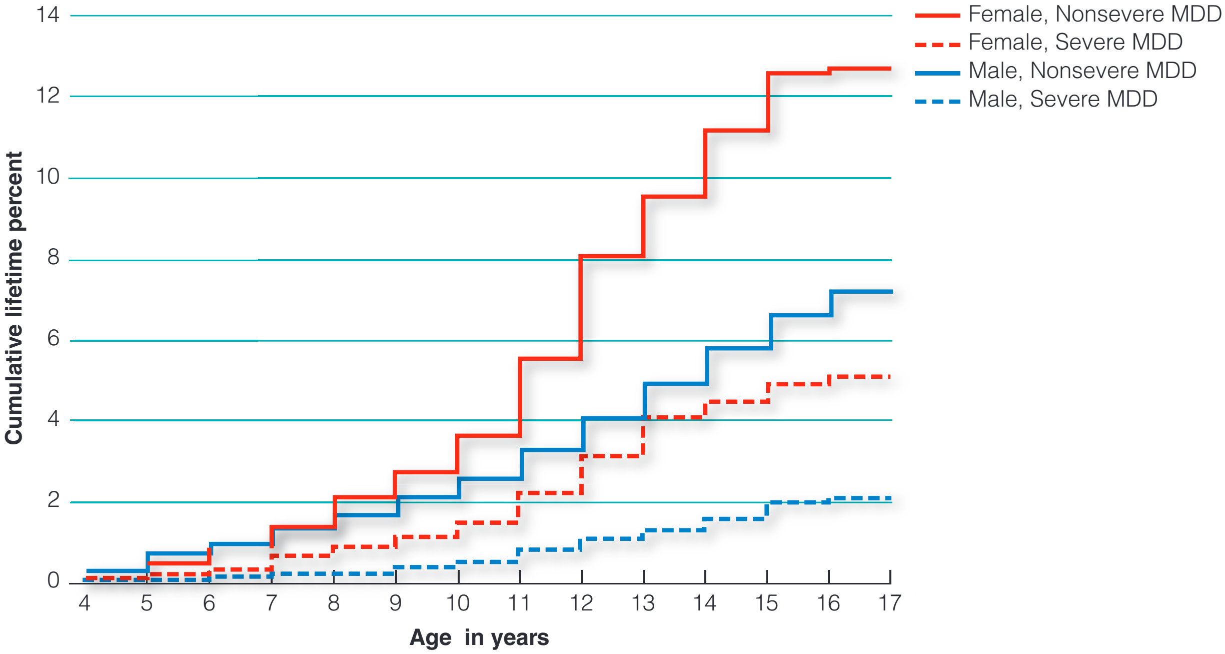

FIGURE 12:2 Cumulative lifetime prevalence of major depressive disorder by sex and severity.

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BOX 12:1

RISK AND RESILIENCE

Gender Differences in Depression in Adolescence

One of the most striking examples of developmental psychopathology can be found in the relations among depressive disorder, age, and gender. Depressive disorder occurs in childhood at relatively equal rates in boys and girls. However, as children move through puberty and into adolescence, girls develop depression at an accelerated rate until they are twice as likely to develop depression as boys. This finding is so striking and so well replicated that it is sometimes referred to as "the big fact" (Araya, Montero-Marin, Barroilhet, Fritsch, & Montgomery, 2013; Galambos, Leadbetter, & Barker, 2004). Whereas this developmental pattern is clear, the reasons for the shift in the prevalence of depression are more elusive.

A number of hypotheses have been investigated. Some researchers have examined differences in risk factors prior to adolescence that may make depression more likely within the context of the challenges of adolescence. One such risk factor is the sexual abuse of preadolescent children. A history of sexual abuse is known to predispose an individual to later depression, and girls are far more likely than boys to have been sexually abused (Hilt & Nolen-Hoeksema, 2009). In addition, maternal depression appears to be differentially associated with depression in adolescent females (Duggal, Carson, Sroufe, & Egeland, 2001). Female adolescents have also been shown to be more likely to develop depressive symptoms in response to family stress, especially low emotional closeness (Lewis et al., 2015). We also know that genetic factors influence the onset of depression. For example, complex models have revealed pathways ranging from specific genetic risk, to peer stress in early adolescence, to higher incidence of depression in late adolescence for girls (Hankin et al., 2015).

Gender differences in cognitive variables have also been considered. For example, research has shown that boys tend to judge the physical changes that they experience in puberty more positively than girls view the physical changes that they undergo (Garber & Rao, 2014). Also, during early adolescence, girls tend to show a greater need for approval and success, lower levels of positive thinking, and more self-focused negative cognitions; all of these are associated with depressive symptoms (Calvete & Cardenoso, 2005; Garber & Rao, 2014). Other researchers have investigated the roles of biological factors interacting with social development. It may be that both hormonal and social factors promote affiliative needs during puberty for girls, and that these drives create certain vulnerabilities that lead to greater risk for depression (Garber & Rao, 2014; Rudolph, Troop-Gordon, Lambert, & Natsuaki, 2014).

The **cognitive vulnerability–stress model** of depression is an example of a multifactorial risk model focused on gender differences (Hyde, Mezulis, & Abramson, 2008; Mezulis, Funasaki, Charbonneau, & Hyde, 2010). In this model, biological risk factors, affective risk factors, and cognitive risk factors interact with stressors, leading to the development of major depressive disorder. With respect to gender, the model predicts that greater cognitive vulnerability in girls, coupled with increased numbers of stressors in adolescence, explains the differences in rates of depression in adolescent girls.

The link between risk-taking behaviors and adolescent depression has also been a focus of study. In an extensive study sponsored by the National Institutes of Health, the development and correlates of depressive symptoms in nearly 19,000 teens were examined (Waller et al., 2006). Risky behaviors such as the use of tobacco, alcohol, and other drugs, and sexual activity, as well as level and severity of risk taking, were considered. Boys and girls who abstained from these risky behaviors showed no differences in the development of depressive symptoms. The same was true (i.e., equivalent rates of depression) for teens who engaged in very-high-risk behaviors such as intravenous drug use. However, the clinical picture was much different for those teens in the low- and moderate-risk categories. Girls who engaged in low to moderate levels of risky behaviors were significantly more likely than boys to develop depressive symptoms.

The specific mechanisms leading to this correlation are not known, but researchers' hypotheses will guide further studies. It may be, for instance, that behaviors such as substance abuse and sexual activity alter girls' social contexts more than boys' and thus are associated with greater risk. Or it may be that the use of drugs and alcohol affects the developing brains of adolescent boys and girls differently, which then affects cognitive and emotional development in ways that link to later depression. Of course, it is also possible that these risk behaviors are actually the result, rather than the cause, of developing depression. It is important to remember that there is no reason to assume that there is a single explanation for these findings. As with many interesting and challenging aspects of developmental psychopathology, new data on gender and the course of depressive disorders are leading to new questions that, in turn, lead to innovative new research designs capable of addressing complex interactions.

The Case of Marcus

Marcus is 17 years old and in twelfth grade. He is a gifted runner and was recently voted captain of the track team. Throughout high school, Marcus has been active and popular. In addition to being on the track and cross country teams, he is vice president of the student council, plays trumpet in the jazz band, and has been in several school plays. Marcus experienced some difficulties in elementary and middle school, where he struggled academically and got in trouble for being impulsive and somewhat oppositional. In sixth grade, a school counselor suggested that he might have ADHD. At his parents' urging, Marcus's pediatrician started him on a trial of medication typically used to treat ADHD. The trial was discontinued, however, when the medication seemed to exacerbate rather than help the problem. Despite these challenges, a combination of classroom modifications and some individual counseling allowed Marcus to finish middle school on a more positive note. Marcus appeared to thrive in high school, where his energy, extraversion, and enthusiasm found many positive outlets.

The first signs that Marcus would not end his high school career as well as he had started it came early in his senior year. Marcus became preoccupied with a new girl in his English class. Although he had never spoken with her before, he came to class one day with flowers and a necklace that he had bought for her. Although flattered, the girl felt uncomfortable with the attention and let Marcus know this. Marcus's reaction was to profess his undying love for her and assure her that he was certain she was secretly in love with him. At first, other students found this odd but funny and said it was just "Marcus being Marcus." This perception began to change, however, when the girl and her parents went to the principal with a stack of sexually explicit notes that Marcus had sent her by e-mail. Marcus was suspended briefly and moved to a different English class.

Marcus's behavior became more erratic and bizarre. He would get up and pace during classes, and he became increasingly impatient with other students, teachers, coaches, and his family. He often responded belligerently to questions and also pushed a coach following a difficult track practice. Two days after the track incident, Marcus took a history exam, ignoring all questions but one. The essay that he wrote in response to that question was an elaborate and difficult-to-follow argument that all of human history was culminating in the emergence of a superior individual with psychic powers, and that the time was right to reveal the fact that he was that person. Later that same day, Marcus walked into the staff lounge, where he propositioned a teacher. He became angry when told to leave, overturned furniture, and threatened those who tried to intervene. Eventually the police were called, and he was taken to a local hospital. Along the way, Marcus began to weep. By the time he arrived at the emergency room, he was exhausted and despondent. After an initial interview revealed that he was suicidal, Marcus was admitted to the adolescent psychiatric unit. ■

Bipolar Disorders

Bipolar disorders are especially severe forms of mood disorder. They have been extensively researched in the adult population, and their presentation, etiology, and treatment are fairly well understood (see Table 12:3). Bipolar disorders in adults usually involve periods of depression alternating with periods of severe or moderate **mania**. Manic episodes are characterized by unusual and persistent mood elevation, including decreased need for sleep, increased irritability, extremely impulsive and risky behaviors, and sometimes psychotic thinking. Manic symptoms in adolescents, as described in the case of Marcus, may also include grandiose delusions (related to current and later success, or great wealth), increased nighttime activity (such as rearranging furniture in bedrooms or leaving the house to be with friends), pressured speech (i.e., the tendency to speak rapidly and urgently), hypersexuality, and risk-taking behaviors (Alloy, Nusslock, & Boland, 2015). **Hypomania** involves unusual and dysregulated emotions, thoughts, and behaviors similar to mania, although there are no psychotic symptoms and the degree of impairment is less severe. For some adolescents, it may be difficult to identify discrete episodes of disorder because there may be a gradual worsening of distressing and dysfunctional behavior. Suicidality is a critical concern. Overall, these clinical symptoms and diagnostic criteria are very similar for both adolescents and adults.

There are several subtypes of bipolar disorders. *Bipolar I disorder* is diagnosed when an individual displays both major depressive episodes and at least one episode of mania. *Bipolar II disorder* is diagnosed when an individual displays both major depressive episodes and hypomanic episodes. *Cyclothymia* is diagnosed when the individual presents with a combination of hypomanic episodes and depressive symptoms that do not meet the criteria for a major depressive episode. Bipolar I disorder is the most severe, and cyclothymia the least severe with respect to symptoms and impairment (Alloy et al., 2015).

The clinical picture is more complicated, however, when the issue is bipolar disorder in children. Like earlier debates over whether children actually experience

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TABLE 12:3 Bipolar I Disorder: Summary of DSM-5 Diagnostic Criteria

Note: For a diagnosis of bipolar I disorder, it is necessary to meet the criteria for a manic episode. The manic episode may have been preceded or followed by hypomanic or depressive episodes.

Mania Episode

A. A distinct period of abnormally and persistently elevated, expansive, or irritable mood lasting at least one week and present most of the day, nearly every day.

B. During the period of mood disturbance and increased energy or activity, three or more of the following symptoms are present to significant degree and represent a change from usual behavior.

1. Inflated self-esteem or grandiosity.
2. Decreased need for sleep.
3. More talkative than usual or pressure to keep talking.
4. Flight of ideas or subjective experience that thoughts are racing.
5. Distractibility.
6. Increasing goal-directed activity or psychomotor agitation.
7. Excessive involvement in activities that have a high potential for painful consequences.

C. The mood disturbance is sufficiently severe to cause marked impairment in social or occupational functioning or to necessitate hospitalization to prevent harm to self or others, or there are psychotic features.

Hypomanic Episode

Similar in presentation to a manic episode, but attenuated in severity and duration.

Major Depressive Episode

See Table 12:1 for criteria for major depressive episode.

major depression, the question of whether (and how often) bipolar disorder is accurately diagnosed in children remains controversial. "For prepubertal children especially, the devil has been in the details in defining episode, euphoria, grandiosity, decreased need for sleep, and distinguishing the other symptoms of bipolar disorder from various childhood conditions, especially attention deficit/hyperactivity disorder" (Meyer & Carlson, 2010, p. 36). The current consensus is that bipolar disorder can emerge in childhood, but that it is relatively rare, difficult to diagnose, and complicated to treat (Carlson & Klein, 2014; Meyer & Carlson, 2010). When bipolar disorder is observed and diagnosed in children and young adolescents, the revised DSM-5 criteria emphasize the similarities in clinical presentation among children, adolescents, and adults, with an increased focus on the *episodic nature* of mania. This is in contrast to the chronic display of irritability in disruptive mood dysregulation disorder.

Further, in the same way that we evaluated an episode of major depression against the variability in negative emotion observed in typically developing children and adolescents, we need to consider mania in the context of the variability in positive emotion and positive mood observed in typically developing children and adolescents (Gruber et al., 2016). Clinically salient episodes of mania are associated with experiences of both joy and contempt and an atypical, all-consuming focus on pursuing rewards and ambitious goals (Gruber et al., 2016). The increasing prevalence across adolescence of manic symptoms is associated with greater severity of bipolar disorder and suicidality (Merikangas et al., 2012). Because conceptualizations of bipolar disorders in childhood and adolescence have undergone revision, rates of disorder are difficult to estimate. Rates in late adolescence are assumed to be similar to rates observed in adults, approximately 4% of the population (Carlson & Klein, 2014). The median range for age of onset is between late adolescence through age 30, but the first high-risk period is between 15 and 19 years of age, during which "bipolar conditions commence, consolidate, and often progress to a more severe course" (Alloy et al., 2015, p. 217).

Developmental Course

Continuity of Depressive Disorders

As with all types of child psychopathology, developmental continuity is often observed for youth with major depressive disorder. That is, struggles in childhood are associated with struggles in adolescence, and struggles in adolescence are associated with struggles in adulthood (Costello, Foley, & Angold, 2006; Garber & Rao, 2014;

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Rutter et al., 2006). Although continuity is common, other pathways are also possible, including the emergence of difficulties in adolescence without previous symptomatology, subthreshold symptoms that increase in severity and contribute to the emergence of major depressive disorder, and the emergence of adult depression preceded by anxiety disorders in childhood and adolescence (Garber & Rao, 2014; Georgiades, Lewinsohn, Monroe, Seeley, 2006; Rutter, Kim-Cohen, & Maughan, 2006).

Individual differences in developmental pathways and outcomes depend on a variety of factors. Repeat episodes and worse outcomes are linked to gender, early diagnosis, severity of depression, history of sexual abuse, parent psychopathology, and poor peer relationships (Barbe, Bridge, Birmaher, Kolko, & Brent, 2004; Birmaher et al., 2004; Essau et al., 2010; Garber & Rao, 2014). Thinking back to the case of Rebecca earlier in the chapter, there are several risk factors that portend long-term difficulties. First, she is a girl. Whereas gender ratios for depression are relatively equal in early and middle childhood, being a girl may further complicate the clinical presentation as she transitions into adolescence. Rebecca's depression is also identified before puberty. And her depression is severe, accompanied by suicidal ideation. But there are also protective factors that may balance or moderate the developmental course of the disorder. Rebecca's parents are aware and involved, and she has a history of good friendships. With this mixed set of risk and protective factors, either better or worse outcomes for Rebecca are possible.

Most children and adolescents who experience depression deal with multiple episodes. In addition to the ongoing struggle with depressive psychopathology itself, it is necessary to understand how repeat episodes of depression interfere with everyday challenges. For example, major depressive disorder has a negative impact on school achievement, especially for boys. To the extent that children take pride in academic success and denigrate themselves when they do poorly, additional cycles of depression, failure, and despair may exacerbate the initial psychopathology and contribute to a poor self-image that lasts years longer than treated, time-limited episodes of depression (Street et al., 2004). Peer difficulties, including poor-quality relationships and peer rejection, exacerbate depressive symptoms and likely interfere with typical peer-related developmental achievements (Garber & Rao, 2014).

Data on the developmental course of children diagnosed with disruptive mood dysregulation disorder are limited (given its recent description). Available data suggest that young adults with a history of disruptive mood dysregulation disorder are more likely to struggle with depressive disorders, anxiety disorders, and pervasive impairments (Copeland, Shanahan, Egger, Angold, & Costello, 2014; Leibenluft & Stoddard, 2013; Stringaris & Goodman, 2009).

With respect to the ongoing impact of children's depressive disorders on parents and families, there are many studies, a great deal of data, and various conclusions. Children's depression is often accompanied by difficult communication, conflict, disturbed relationships, and decreases in nurturant parenting (Kim et al., 2003). Intact, better functioning families are predictive of more rapid rates of recovery (Geller et al., 2002).

A number of professionals have noted that mood disorders in children and adolescents may also be linked with special strengths. For example, some children "may learn to be especially attuned to others' feelings and sensitivities, which in some contexts may be especially adaptive and valuable" (Cummings, Davies, & Campbell, 2000, p. 335). These children may focus their talents on animal care, artistic endeavors, or volunteering and community involvement.

Comorbidity across Time

Comorbidity is another influential factor. Major depressive disorder combined with other internalizing or externalizing disorders is associated with increased impairment, substance use and abuse, and suicidality (Costello, Foley, & Angold, 2006; Garber & Rao, 2014). In a recent review, two specific trajectories have been described. The first is a depression-only pathway and is more common in girls. The second is a depression plus conduct problems pathway. This second pathway is not gender-specific and is associated with lower cognitive ability (Riglin et al., 2016).

Depressed adolescents with substance abuse disorders are more likely to be diagnosed later with personality disorders (i.e., inflexible, maladaptive personality patterns together with serious personal and social distress and impairment), such as borderline personality disorder (Grilo, Walker, Becker, Edell, & McGlashan, 1997). Clinicians have hypothesized that some adolescents may attempt to "self-medicate" with either drugs or alcohol. Given that depression usually precedes substance abuse by several years, Cicchetti and Toth (1998) have described a window of opportunity (between the onset of the major depression and the later onset of substance abuse) where mental health professionals might focus specific prevention efforts.

Continuity of Bipolar Disorders

With respect to bipolar disorders, a chronic pattern has been observed for children and adolescents. Ongoing difficulties include both subthreshold symptoms and full episodes (Birmaher et al., 2009). Mild forms of bipolar disorder increase risk for more severe disorder. Approximately 20% to 25% of children and adolescents convert from bipolar II to bipolar I over time; conversion of cyclothymia to bipolar II is also common (Alloy et al., 2015). Similar to adults, recovery rates are high, but recurrences are frequent (Carlson & Klein, 2014). Factors associated with worse outcomes include difficult temperament, rapid cycling of episodes, psychotic features, low SES, comorbid disorders, and poor adherence to treatment (Alloy et al., 2015).

For individuals at high risk (because their parents were diagnosed with bipolar disorder), there was variability in the display of subthreshold symptoms that led to later disorder, as well as in adolescent anxiety disorders that preceded later bipolar disorder (Axelson et al., 2015; Meyer & Carlson, 2010). A history of maltreatment is associated with early onset of bipolar disorder, greater symptom severity, increased comorbidity, and worse outcome (Agnew-Blais & Danese, 2016). Other data suggest that cultural factors have an impact on outcome. For example, adolescents from Taiwan fare better than adolescents in the United States (Strakowski et al., 2007). Better outcomes for adolescents in Taiwan were explained in part by lower levels of depression and substance abuse, earlier help-seeking, and longer hospitalizations (Strakowski et al., 2007).

Etiology

Depressive Disorders

There are many causes, many pathways, and many outcomes for children and adolescents with depressive disorders. As with other types of psychopathology, it is necessary to construct risk models that include multiple factors, in various combinations, that lead to disorder. One such model provides a multilevel, developmental framework, with both direct and interactive effects (Garber, 2007) (see Figure 12:3). Other approaches provide longitudinal perspective on multiple risk and protective factors (Lewis, Jones, & Goodyer, 2015).

Genes and Heredity

Estimates of heritability for mood disorders for children and adolescents are moderate and are similar to those observed for adults; there is some evidence for higher heritabilities in boys (Birmaher et al., 2004; Ehringer, Rhee, Young, Corley, & Hewitt, 2006; Elizabeth, King, & Ollendick, 2004). Many genetically informed studies include a focus on genes believed to be involved in emotion regulation and stress reactivity, such as the serotonin transporter linked promoter region gene (*5-HTTT*) (Garber & Rao, 2014). The genetic impact

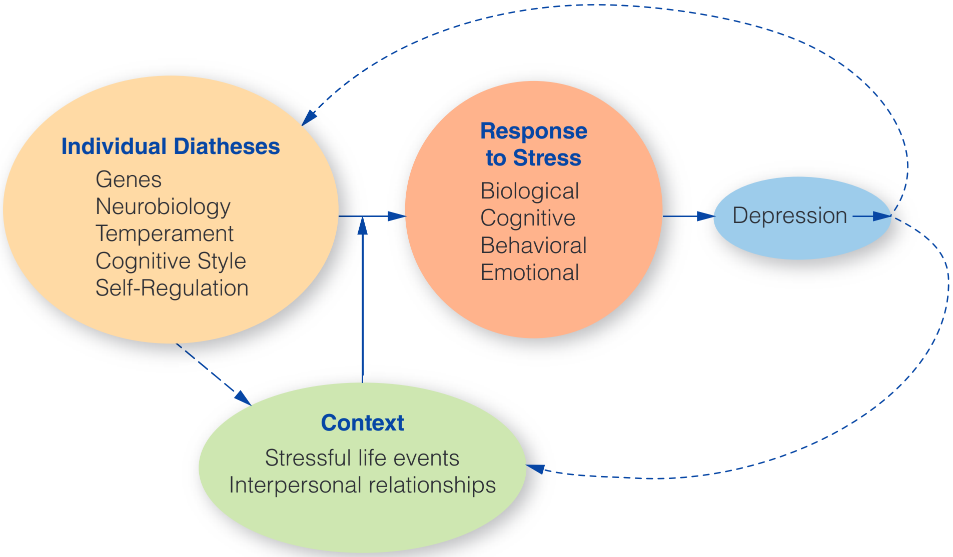

FIGURE 12:3 A multilevel biopsychosocial model of depression.

Source: J. Garber (2007). Depression in youth: A developmental psychopathology perspective. In A. S. Masten (Ed.), Multilevel dynamics in developmental psychopathology: Pathways to the future, in *Minnesota Symposia on Child Psychology* (Vol. 34). Mahwah, NJ: Erlbaum. Reproduced with permission of TAYLOR & FRANCIS GROUP LLC—BOOKS.

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on depressive symptoms appears to increase as children age. This increase in heritability appears linked to gene-by-environment interactions, with individuals at high genetic risk experiencing more negative life events than individuals at low genetic risk (Garber & Rao, 2014; Rutter et al., 2006). Family studies of depressive disorder indicate that "having a depressed parent is one of the most powerful predictors of depression in children, which likely is due to both genetic and environmental influences" (Garber, 2007, p. 202). In addition, in an example of differential sensitivity, at-risk adolescent boys with a *5-HTTT* genetic variant do better in the presence of positive family support and worse in the presence of poor family support (Li, Berk, & Lee, 2013).

Physiological Factors

Physiological investigations have identified a number of structural, functional, and biochemical differences that contribute to the emergence of depressive disorders. Atypical structure and function of brain regions involved in the experience and regulation of negative mood (e.g., the amygdala, the insula) have been observed (Forbes & Dahl, 2005; Garber & Rao, 2014). There are also data depicting decreased blood flow and reduced activation patterns in the left frontal regions of the brain, and these electroencephalograph (EEG) asymmetries continue into adulthood (Garber & Rao, 2014). Atypical patterns of brain connectivity have also been observed (Garber & Rao, 2014). Taking these types of physiological factors into account, Pennington (2002, p. 117) describes an "imbalance between top-down (prefrontal) and bottom-up (amygdala) components of the affect regulation system." Additional research highlights the dysregulation of neurotransmitters—norepinephrine and serotonin in particular (Garber & Rao, 2014). Dysregulation of physiological threat systems may, in turn, lead to chronic overactivity of the hypothalamic-pituitary-adrenal (HPA) axis (Garber & Rao, 2014; Klimes-Dougan et al., 2014). Overall, the neural pathways that lead to depressive disorders appear to be distinct from neural pathways to bipolar disorder (Rich et al., 2011).

The physiological bases of temperament also likely play an etiological part. Young children with difficult temperaments, who show decreases in flexibility and increases in negative moods, are at higher risk for the development of mood disorders (Austin & Chorpita, 2004; Lonigan, Phillips, & Hooe, 2003). Sleep disturbances are also commonly described, with variable patterns related to sleep architecture (e.g, types of sleep, arousal patterns) and sleep EEG rhythms (Alfano & Gamble, 2009; Gregory & Sadeh, 2015). Decreased sleep is associated with increases in negative mood and risk-taking behaviors (Holm et al., 2009). Better sleep may be a protective factor in children and adolescents (Garber & Rao, 2014; Silk et al., 2007).

Pennington (2002, pp. 116–117), investigating the physiological consequences of social stress, emphasizes the roles of "behavioral sensitization and electrophysiological kindling" and states that "social stress causes a permanent vulnerability in the HPA axis." He suggests that over time, the increasingly sensitive neurological response system requires lower thresholds of stimulation to trigger a new episode. This **kindling model** explains in part why later episodes of depression occur in the context of less severe stress. The kindling model may be further understood in the social context of brain development. That is, changes in the microstructures of the brain take place in continuous transaction with the environment. With the rapid production of neurons in early life, followed by neuronal pruning, stabilization, and sensitization, the experience of social distress and dysfunction has both immediate and long-term negative impacts (Curley, Jensen, Mashoodh, & Champagne, 2011; Dougherty, Klein, Rose, & Laptook, 2011).

Finally, given the dramatic increases in rates of depressive disorders in adolescence, puberty changes and the timing of puberty are the frequent focus of study (Angold, Worthman, & Costello, 2003; Ge et al., 2003; Twenge & Nolen-Hoeksema, 2002). Early pubertal transitions are associated with greater stress, particularly for girls. Physiological challenges include changes in hormone levels and endocrine functioning; the worrisome notion of raging hormones is now understood to be exaggerated (Weisz & Hawley, 2002). Still, there is clear evidence that neural systems do undergo significant change in brain regions associated with emotion, motivation, and decision making (Forbes, Phillips, Silk, Ryan, & Dahl, 2011; Forbes & Dahl, 2010; Pine, 2009). For some girls, physical development outpaces cognitive and emotional development. Social pressures may also increase, as peers and adults expect more adultlike behavior from those whose appearance suggests greater maturity. For boys, early maturity has a mix of positive and negative impacts, with higher levels of self-esteem balanced by engaging in more frequent risk behaviors.

Child Factors

Cicchetti and others (e.g., Cicchetti, Rogosch, & Toth, 1997) have described four domains in which atypical processes increase the risk of depression: (1) physiological regulation, (2) emotion differentiation and regulation, (3) the attachment relationship, and (4) the emergence of self and self-awareness. These investigators suggest that these deficits or problems influence children's lack of success in negotiating early and ongoing developmental challenges, and this lack of success leads to poor outcomes.

Zahn-Waxler (2000) believes that emotion dysregulation is the core deficit. According to Zahn-Waxler, intense, prolonged, and poorly controlled experiences with emotion lead to the development of an affective bias. The bias or tendency to feel sad is usually most prominent, but there may also be biases related to anxiety, guilt, and shame. Having fewer emotion-regulation strategies, less effective strategies, or believing that strategies are ineffective contributes to the development of mood disorders (Brent & Maalouf, 2009; Cole, Luby, & Sullivan, 2008; Garber & Rao, 2014).

Attachment status has far-reaching impact, with an emphasis on the association between insecure attachment patterns and the emergence of internalizing disorders such as depression. Feelings of emotional security are the primary concern. According to Cummings, Davies, and Campbell (2000), *emotional security* is central to the regulation of many kinds of behavior and is tied to three underlying processes: the child's emotional reactivity; representations of family relationships (i.e., the internalized working models); and regulation of exposure to family emotion. In addition, attachment security appears to moderate the child's response to later stress (Nachmias, Gunnar, Mangelsdorf, Parritz, & Buss, 1996). Lack of emotional support in early development may also lead to cognitive consequences, including negative self-concept and negative beliefs about the self. Dysfunctional cognitions that develop early may become entrenched because of ongoing or additional negative events.

Other emotion-related risk factors include temperament and irritability. With respect to temperament, the combination of high negative emotionality and low positive emotionality increases risk for depressive disorders; this particular risk is especially salient for girls who also experience harsh or punitive parenting (Garber & Rao, 2014). Irritability is its own risk factor, but it also increases the likelihood of negative attentional bias and negative interpretations (Leibenluft & Stoddard, 2013).

Cognitive theories that emphasize self-efficacy (including Aaron Beck's information-processing theory of depression, Albert Bandura's work on self-efficacy, and Martin Seligman's classic theory of learned helplessness) provide additional details about how cognitive factors influence developmental pathways to depression. Cognitions that increase the risk for depression include negative beliefs about the self, negative beliefs about the world, and negative beliefs about the future (Beck, 1987). In numerous studies, children who display negative automatic thoughts, dysfunctional attitudes, and low self-efficacy and self-esteem are more likely to develop depressive disorders (Beck & Bredemeier, 2016; Garber & Rao, 2014; again, see Box 12:1). According to Sonuga-Barke et al. (2016, p. 335, italics in original), a distinctive pattern of dysfunctional cognitive processing in depressed children and adolescents involves "*disengaged*, *perseverative*, and *pessimistic* decision making." Negative beliefs may develop because of problematic early experiences, additional life stressors, difficult interpersonal relationships (e.g., with peers), or modeling others' beliefs (Garber & Rao, 2014; Sonuga-Barke et al., 2016).

One cognitive characteristic that has received a lot of research attention is **rumination,** a "relatively stable maladaptive coping strategy" that involves repeated focus on problems or symptoms and causes and consequences of those problems or symptoms (Burwell & Shirk, 2007, p. 56). Rumination appears to prolong episodes of depression, especially in girls and young women (Essau et al., 2010; Jose & Weir, 2013; Nolen-Hoeksema, 2002). Further, a "cost of caring" has been described in girls' friendships, in which the rumination of one friend is associated with increased empathic distress in the other (Smith & Rose, 2011).

Psychological characteristics that decrease the likelihood of externalizing disorders may ironically increase the likelihood of other disorders. Particular personality types, such as being overcontrolled, illustrate this paradoxical situation (Robins, John, Caspi, Moffitt, & Stouthamer-Loeber, 1996; Zahn-Waxler, Klimes-Dougan, & Slattery, 2000). That is, a child who is overcontrolled is less likely to display problematic externalizing behaviors such as defiance or aggression, but is more likely to display problematic internalizing behaviors such as worrying or withdrawal. Empathy may be a "risky strength" for children and adolescents in combination with other risk factors, such as emotion dysregulation or negative thinking processes (Tone & Tully, 2014, p. 1547). Individual differences in coping must also be considered because short-term strategies for dealing with stress and pain often become either more positive or more negative long-term traits. So, for example, "avoidance takes the form of moving out of the house. Escapes become enduring dedications, such as 'working like a lion' in school, excelling in sports, [or] becoming 'spiritual'" (Radke-Yarrow & Klimes-Dougan, 1997, p. 386).

Parent and Family Factors

There have been numerous investigations of children of depressed parents. Longitudinal data provides clear evidence that depressed parents, in addition to their genetic and physiological impact, have children who struggle with a variety of internalizing and externalizing disorders (Garber & Rao, 2014; Goodman et al., 2011). But not all children with depressed parents are depressed themselves. If they do have problems, not all of them are similar. Most research on depressed parents focuses on mothers. Results of research with fathers are mixed. There are data that document the negative impact of depressed fathers, and other data suggesting that a father's depression is less strongly related to child depression than a mother's depression (Kane & Garber, 2004).

In the "launch and grow" model of depression, a set of cascading effects (related to self-worth, family environment, and stressful life events) is set into motion for children who experienced maternal depression by age 12 and predicted the trajectory of depression across adolescence (Garber & Cole, 2010). Another recent model focused on parents is a dynamic stress-regulation model in which parent depression increases the child's stress sensitivity and leads to the development of both internalizing and externalizing disorders (Laurent, 2014; see Figure 12:4).

Three **pathways of parental impact** on child and adolescent depressive disorders have been described (Cummings et al., 2000):

- Parent depression affects parent–child relationships and interactions and leads to child psychopathology.
- Parent depression affects family relationships and interactions and causes family disruptions, which lead to child psychopathology.
- Parent depression affects relationships with romantic partners, and this leads to child psychopathology.

With respect to the parent–child relationship, Cicchetti et al. (1997) note that depressed mothers are "affectively asynchronous" with their infants. That is, the sadness, social withdrawal, and reduced activity that are hallmarks of adult depression interfere with the typical positive emotional and behavioral exchanges that characterize mother–infant interactions. Some depressed parents express irritability or hostility or hold negative beliefs about their children (Goodman et al., 2011). The timing, severity, and chronicity of parent depression may moderate or intensify these patterns. The emotional unavailability and insensitivity sometimes seen in depressed parents hinder the development of secure attachment relationships. Depressed mothers with comorbid psychopathology (such as personality disorders) have an even more negative impact (Ellenbogen & Hodgins, 2004; Radke-Yarrow & Klimes-Dougan, 1997). Parenting practices of depressed parents are also frequently inconsistent and ineffective. Children with additional risk factors, such as higher rates of irritability or negative emotion, may be particularly vulnerable to poor-quality care (Whelan, Leibenluft, Stringaris, & Barker, 2015).

Overall, many of these risk factors are consistent with a **reinforcement model** of depression (Pennington, 2002), in which parents offer fewer rewards and more punishments to their children. This model is sometimes viewed as more consistent with the maintenance of depression in children rather than the emergence of depression. Mental health services that support effective parenting for mothers and fathers with depression are essential.

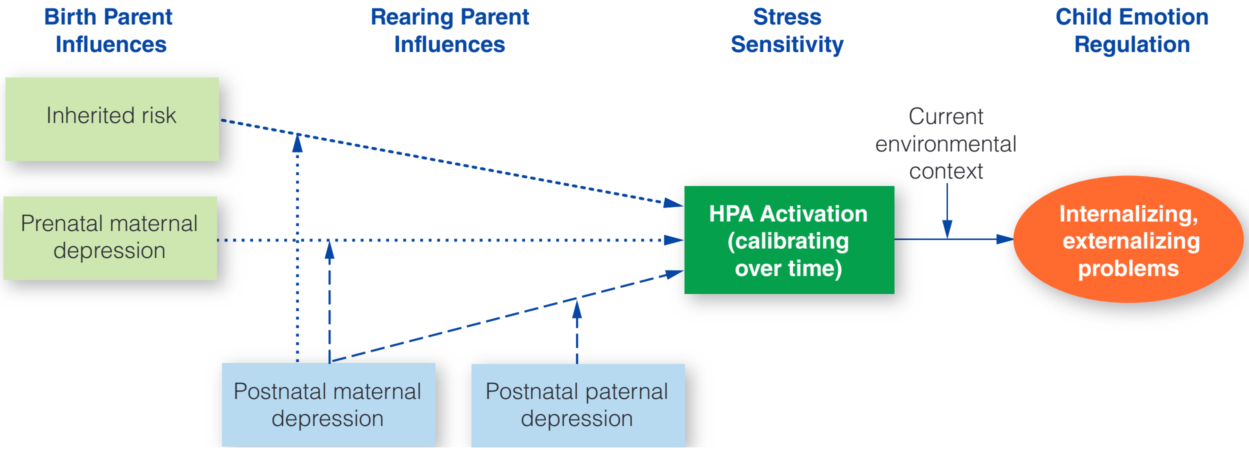
Birth Parent Influences
Rearing Parent Influences
Stress Sensitivity
Child Emotion Regulation
Inherited risk
Prenatal maternal depression
Postnatal maternal depression
Postnatal paternal depression
Current environmental context
HPA Activation (calibrating over time)
Internalizing, externalizing problems

FIGURE 12:4 A model of parent–child emotion regulation via stress sensitivity.

Source: Laurent, H. K. (2014). Clarifying the contours of emotion regulation: Insights from parent-child stress research. Child Development Perspectives, 8, p. 31.

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Along with other risk factors, having depressed parents significantly increases the likelihood that a child will develop depression or another form of psychopathology.

Even as we discuss the caregiving difficulties experienced by depressed parents, we need to remember that many depressed parents exhibit average or even excellent parenting. "For example, a girl's father, despite being alcoholic and depressed, may remain very loving and caring toward her. While she may experience the negative sequelae of the father's problems, she may also firmly understand that she is loved and may treasure and benefit from those experiences that are supportive and special" (Cummings et al., 2000, p. 301). It is also the case that there is specificity observed in children's interactions with a depressed parent, so a child's relationships with nondepressed adults may serve as important protective factors.

Certain child factors moderate or exacerbate the impact of parent depression. The age and developmental stage of a child may interact with various symptoms of parental depression (Radke-Yarrow & Klimes-Dougan, 1997). Or, for instance, "a child may have an easy temperament, with a high capacity to adapt, or even profit, from adversity" (Cummings et al., 2000, p. 301). Gender again plays a role. In a recent meta-analysis, maternal depression was more strongly associated with internalizing disorders for girls (Goodman et al., 2011).

With respect to family relationships and family atmosphere, family conflict is an important risk factor (Garber & Rao, 2014). But specific family factors may have differential impacts, depending on ethnicity or gender. High levels of family conflict appear to be particularly problematic for European American adolescents, whereas lack of family cohesion appears to be especially problematic for African American adolescents (Herman, Ostrander, & Tucker, 2007). High conflict also appears to have a disproportionate impact on adolescent girls (Lewis et al., 2015). Although all families experience stress and conflict, families with a depressed adult often experience more atypical stressors and less competent coping. According to Radke-Yarrow and Klimes-Dougan (1997, p. 383), in well-functioning families, "severe stress is generally severe in ways that are 'normal' (e.g., illness, death, loss of job, husband-wife incompatibility). In the depressed families, there is a compounding of stress, not only of the 'normal' sort but also of a less normal nature (e.g., husband throws the family out of the house; the depressed mother disappears and neighbors and church members take over the running of the family; the children are abused by a live-in uncle; mother cannot manage the daily routines, so the eight-year-old takes over)."

Finally, parent psychopathology influences child psychopathology via mechanisms related to adult conflict. Depressed parents are negative and critical toward their partners as well as their children. Warmth and emotional support from the well partner is critical in helping the struggling partner both with the disorder and with parenting. However, "the tiresome, chronic reassurance seeking and frustrating inconsistency . . . may lead to eventual rejection by significant others" (Cummings et al., 2000, p. 313).

Environmental Factors

Even with the myriad factors related to genes, individual characteristics, and family functioning, we should not overlook the impact of larger events (such as trauma) and larger environments (such as culture and socioeconomic background) on the development of mood disorders (Garber & Rao, 2014). However,

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we should also be thinking about the emergence of psychopathology in more complex ways. For example, as we have frequently noted in discussions of differential sensitivity, children at high genetic risk may be more vulnerable to the effects of adverse environments. Also, individual children, even those in the same family, may respond differently to a stressor; distinctions need to be made between shared risk factors (affecting all siblings) and nonshared risk factors (affecting only one sibling, or affecting one or more siblings disproportionately).

Both specific **negative life events** (such as a parent losing a job or a serious illness in the family) and **chronic hassles** have been associated with depression in children, especially in the early years (Garber & Rao, 2014;). With increasing age, interactions between negative events and the child's cognitive abilities and tendencies (such as pessimistic explanatory styles) become more important (Nolen-Hoeksema, Girgus, & Seligman, 1992; Riglin et al., 2015), as well as interactions between environmental factors (negative events and social support) (Petti et al., 2004).

In addition to major life events, chronic hassles can contribute to high levels of stress. Problematic peer relationships, and romantic difficulties in particular, may also be extremely stressful for adolescents. Depressed youth have "both real and perceived peer problems," including social skills deficits, poorer-quality friendships, and experiences with rejection (Garber & Rao, 2014, p. 505). Perceived rejection is a more salient risk factor than actual rejection (Garber & Rao, 2014). Youth with bipolar disorder also report fewer close friendships and more victimization than typically developing peers (Siegel, Freeman, La Greca, & Youngstrom, 2015). Evidence that girls are exposed to more episodic stressors, as well as more total stressors, may provide additional perspective on observed gender differences in rates of depression (Frost, Hoyt, Chung, & Adam, 2015). Further, the timing and severity of adverse experiences appears to differentially influence the emergence and course of depression in adolescent girls compared to adolescent boys. Early preschool exposure to high-impact adversity, for example, is associated with depression in adolescent girls, but not adolescent boys. Adolescent girls also display more depression following lower-impact exposure in elementary school (St. Clair et al., 2015). As an everyday, environmental risk factor, poverty exerts a number of deleterious effects. In addition, it appears to "be a broad-scale enhancer of risk in relation to depression in mothers" (Goodman et al., 2011, p. 15). That is, findings related to the effects of maternal depression on children are magnified in the presence of poverty. Neighborhood adversity also constrains the benefits of available protective factors (Silk et al., 2007).

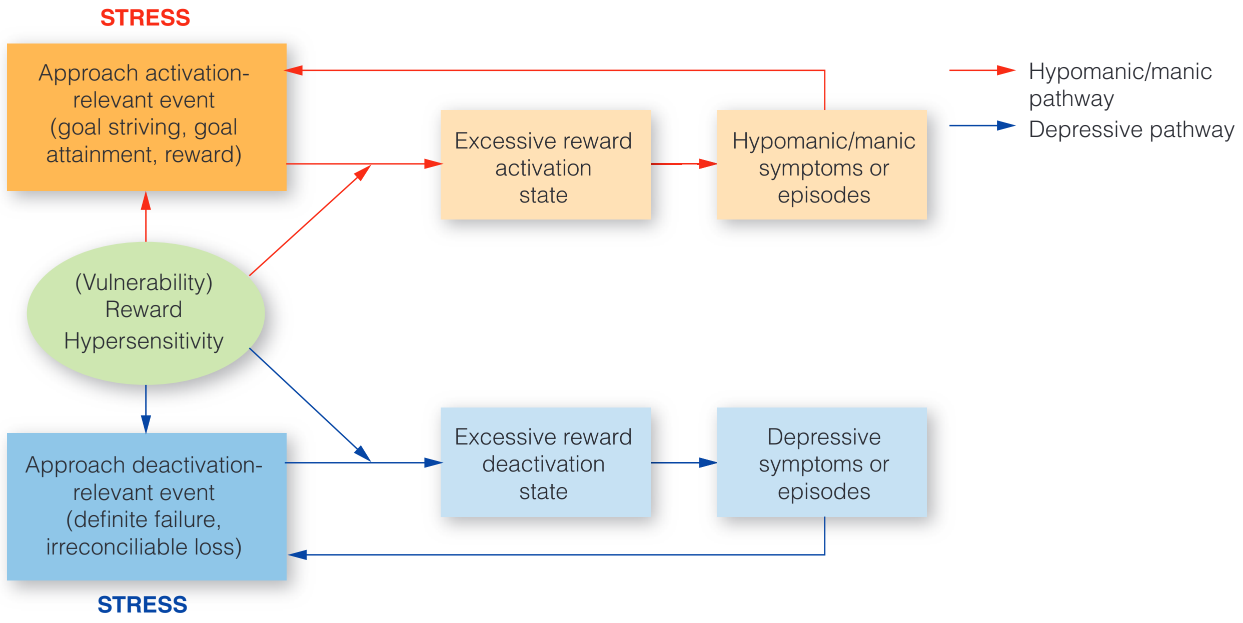
STRESS
Approach activation-relevant event (goal striving, goal attainment, reward)
Excessive reward activation state
Hypomanic/manic symptoms or episodes
Hypomanic/manic pathway
Depressive pathway
(Vulnerability) Reward Hypersensitivity
Approach deactivation-relevant event (definite failure, irreconcilable loss)
Excessive reward deactivation state
Depressive symptoms or episodes
STRESS

FIGURE 12:5 The reward hypersensitivity model of bipolar disorders.

Source: L. B. Alloy, R. Nusslock, & E. M. Boland (2015). The development and course of bipolar spectrum disorders: An integrated reward and circadian rhythm dysregulation model. *Annual Review of Clinical Psychology.*

Maltreatment, including physical abuse, sexual abuse, emotional abuse, and neglect, long understood to be precursors of insecure attachment, are also predictably related to later mood disorders in children and adolescents (Cicchetti & Toth, 1995, 2003; Nanni, Uher, & Danese, 2012). Individual and developmental factors, the specific form, severity, and chronicity of abuse, and other environmental factors all influence children's outcomes (Barbe et al., 2004).

Bipolar Disorders

As with major depressive disorder, genes are important determinants of risk for bipolar disorder (Mahon, Burdick, & Malhotra, 2015; McNamara & Strawn, 2015). Many of the genetic variants that are associated with increased risk for bipolar disorder also increase the risk for other forms of psychopathology. Similar to other disorders, the genetic impact appears to be the result of many genes with small effects (Mahon et al., 2015). Although many individuals with bipolar disorder experience both manic and depressive episodes, research findings from the National Institute of Mental Health's Family Study of Affective Spectrum Disorders suggest that genetic transmission of risk for mania and for depressive episodes is largely independent (Merikangas et al., 2014).

Brain regions implicated in bipolar disorder include the amygdala, ventral striatum, and ventral prefrontal cortex. These regions are involved in emotional and motivational processes. Both atypical structure and function are observed (Russo, de Zwarte, & Blumberg, 2015; Singh, Kelley, Chang, & Gotlib, 2015). Other researchers have emphasized the extensive dysfunction of both affective and cognitive circuits (Passarotti, 2015; Pavuluri, 2015). Prodromal descriptions and specific markers (e.g., physiological or temperamental characteristics) of bipolar disorder are the focus of recent investigations (Luby & Navsaria, 2010).

Two physiological risk factors receiving special attention are *reward hypersensitivity* and *social/circadian rhythm disruption* (Alloy et al., 2015). In the reward hypersensitivity model, the biobehavioral system that regulates motivation and goal-seeking behaviors is hypothesized to be hyperreactive to goal- and reward-relevant cues. Enthusiastic, excited, and often agitated pursuit of rewards is part of the hypomanic or manic symptom pattern. Failure to achieve goals or rewards leads to depressive symptoms (see Figure 12:5). In the social/circadian rhythm model, disruptions in daily social rhythms (such as bedtimes, mealtimes, and school or work time) lead to disruptions in circadian rhythms such as sleep patterns, which in turn lead to mood symptoms (see Figure 12:6). There is strong evidence to support both of these models, and Alloy at al. (2015) propose an integrated *reward/circadian rhythm dysregulation model* to account for the emergence and course of bipolar disorder.

Child risk factors include difficulties with emotion regulation (especially related to anger) and behavior regulation; these kinds of dysregulation can be observed in preschoolers (Muralidharan, Yoo, Ritschel, Simeonova, & Craighead, 2010; Tseng et al., 2015). Parent and family factors such as high negativity, low warmth,

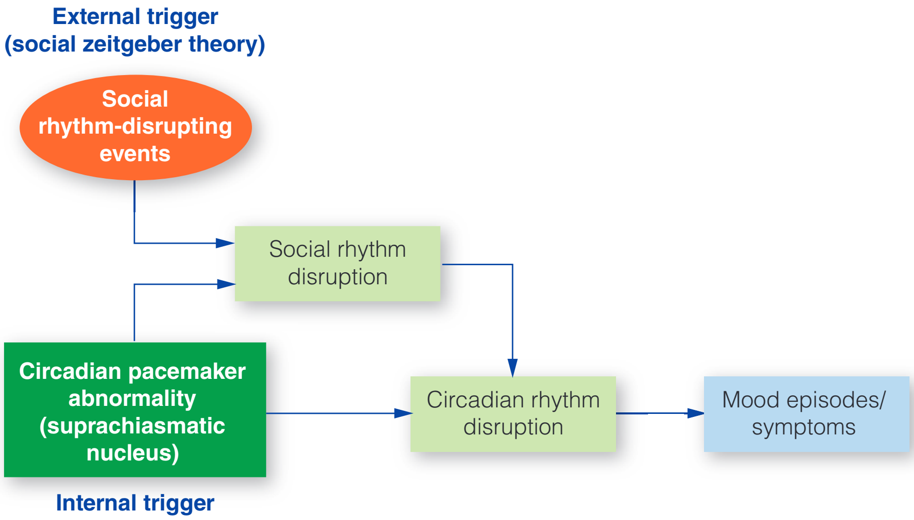
External trigger
(social zeitgeber theory)
Social rhythm-disrupting events
Social rhythm disruption
Circadian pacemaker abnormality (suprachiasmatic nucleus)
Internal trigger
Circadian rhythm disruption
Mood episodes/ symptoms

FIGURE 12:6 The social/circadian rhythm model of bipolar disorders.

Source: L. B. Alloy, R. Nusslock, & E. M. Boland (2015). The development and course of bipolar spectrum disorders: An integrated reward and circadian rhythm dysregulation model. *Annual Review of Clinical Psychology.*

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and conflict predict early onset and a more negative course (Meyer & Carlson, 2010). For those at genetic risk, stressful life events (including maltreatment) also contribute to the development and recurrence of bipolar disorder. A developmental cascade model has been described that links genetic risk to externalizing difficulties, internalizing difficulties, and thought problems; considerable variability in individual pathways was observed (Klimes-Dougan et al., 2010).

Assessment and Diagnosis

Assessment and Diagnosis in Children

With children, assessment of mood disorders is complex because agreement between parents and children about the presence of depression is often low (Cole, Hoffman, Tram, & Maxwell, 2000) and many of the symptoms of depression are also observed in children with other psychopathologies. Irritability, for example, is a common complaint of parents and teachers and may be characteristic of many internalizing and externalizing disorders (Leibenluft & Stoddard, 2013; Vidal-Ribas et al., 2016). Comprehensive assessments, then, must include multiple measures, such as self-report, parent report, medical exams, and observations. There are many standardized interviews and checklists; among the most frequently used is the Children's Depression Inventory (Kovacs, 1985, 1992). For disruptive mood dysregulation disorder, careful assessment involves close attention to atypical development in preschoolers and older children (Egger & Emde, 2011). Children who meet the diagnostic criteria for both disruptive mood dysregulation disorder and oppositional defiant disorder are diagnosed *only* with the more severe disruptive mood dysregulation disorder.

For children at risk for bipolar disorder, well-known inventories of child and adolescent symptoms may provide useful information (Carlson & Klein, 2014). There continues to be considerable diagnostic confusion when trying to differentiate mania (and bipolar disorder) from ADHD. Impulsivity and hyperactivity are certainly part of the clinical presentation of both disorders. The presence of distinct episodes and appropriate developmental considerations are essential to accurate diagnosis (Carlson & Klein, 2014). Early onset bipolar disorder can be differentiated from ADHD by the presence of typically manic symptoms such as elated mood, flight of ideas, and grandiosity (Carlson & Klein, 2014), and children themselves are often accurate reporters of such symptoms (Tillman et al., 2004). A child with elated mood might laugh hysterically in inappropriate situations, with no obvious reason. Flight of ideas may be evident in rapid and continuous jumping from one topic to another, often with loud, pressured speech. Children presenting with grandiosity often believe that they have superior knowledge and abilities and behave as if rules do not apply to them. In extreme instances, they may state that they have supernatural powers.

Comorbid psychopathology is a critical aspect of assessment and diagnosis because many children with major depressive disorder also have other psychopathologies. The most frequent are dysthymia and anxiety disorders, with anxiety disorders usually preceding the mood disorder. Other internalizing and externalizing disorders are also common.

Assessment and Diagnosis in Adolescents

With adolescents, assessment of mood disorders is even more complicated. Parents and clinicians, as well as adolescents themselves, need to consider possible symptoms in the context of a developmental period characterized by emotional and personal challenges. In addition, with increases in child and adolescent suicide attempts and completions over recent years, it is imperative to screen for suicidality. The selection of evidence-based instruments is absolutely critical, given that there is often little agreement among adolescents, parents, teachers, and clinicians about the presence of psychopathology (Carlson & Klein, 2014; McClure, Kubiszyn, & Kaslow, 2002; Silverman & Ollendick, 2005). There are data that suggest that adolescents underreport their own symptoms and that parent judgments are more accurate (Youngstrom, Findling, & Calabrese, 2003; Youngstrom et al., 2004). However, as noted, adolescents seem better able to identify symptoms that differentiate bipolar disorder from ADHD (Tillman et al., 2004), though progress has been reported related to increased validity of parent-report screening (Tillman & Geller, 2005). Multiple informants may provide valuable perspective (Carlson & Klein, 2014).

Diagnostic accuracy must also take into account differential diagnosis and comorbidity. Clinicians want to find the best explanation of the presenting symptoms while still recognizing that some adolescents will be appropriately diagnosed with more than one disorder. Early-onset schizophrenia must also be considered and ruled out; adolescents from minority backgrounds must be evaluated carefully because there is evidence that they are more frequently misdiagnosed with schizophrenia (Pavuluri, Janicak, Naylor, & Sweeney, 2003). Conduct disorder needs to be separately assessed and addressed.

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Eating disorders, with their accompanying dysregulation of moods and eating, impulsivity, and cravings for activity, require careful consideration (McElroy, Kotwal, Keck, & Akiskal, 2005). And substance abuse is even more common and more problematic for adolescent-onset bipolar disorder than earlier emerging bipolar disorder (Wilens et al., 2004).

Intervention

As we think about the variety of efforts to treat and prevent mood disorders, as well as the fact that many of those treated and targeted are children and adolescents, it is essential to take into account the developmental context of intervention. For instance, motivation is a key contributor to treatment success. Most struggling adolescents do not refer themselves to therapy; once there, many remain reluctant to participate. So immediately addressing motivational issues is important to help adolescents develop a strong therapeutic alliance and engage with specific therapy techniques. Adolescents also appear to prefer active, psychological interventions; selecting such interventions (or including components of these in pharmacological treatments) may increase commitment and follow-through (Jaycox et al., 2006).

The treatment of both depressive disorders and bipolar disorders involves a number of goals, implemented over time. First, acute symptoms (such as suicidality) need to be managed. Then, attention must be paid to the maintenance of improvements. The reduction of long-term complications and the promotion of growth and development also contribute to treatment success. A number of meta-analytic reviews document the immediate and long-term positive impacts of evidence-based treatments for mood disorders (Domino et al., 2008; Miklowitz, 2015; Zhou et al., 2015). Even with these available treatments, many children and adolescents do not receive any treatment. In a large national survey of bipolar disorder in adolescents and treatment patterns, only half of the youth were receiving an intervention specifically designed for bipolar disorder. Approximately 10% were being treated for another disorder, and 38% reported receiving no treatment (Khazanov, Cui, Merikangas, & Angst, 2015). It is clear that access to disorder-specific treatment remains a significant public health issue.

Pharmacological Treatment

Antidepressants are among the most frequently prescribed medications for adolescents, with adolescent girls more than twice as likely to use antidepressants compared to adolescent boys, and white adolescents more likely to use compared to adolescents of minority backgrounds (Jonas, Qiuping, & Albertorio-Diaz, 2013). Keeping this high rate of medication use in mind, a recent meta-analytic review concluded that there was no clear advantage to the use of antidepressants in children and adolescents (Cipirani et al., 2016). With negative effects considered along with likely benefits, fluoxetine was the best medication option (Cipriani et al., 2016). For bipolar disorder, mood stabilizers are the first choice in medications. A combination of medications may be necessary for more severe forms of bipolar disorder (Lytle, Moratschek, & Findling, 2015).

For all children and adolescents receiving medications, informed consent, support for other components of treatment (such as psychotherapy), and monitoring of improvements and side effects are essential. Hospitalization for those in crisis is an important clinical option, although many children and adolescents experience a range of difficulties following discharge. Only 35% of those in outpatient treatment following hospitalization displayed full medication adherence; complicating factors include comorbidity, lower SES, and lack of a psychotherapy component (DelBello, Hanseman, Adler, Fleck, & Strakowski, 2007).

Child Treatment

Psychosocial interventions for children with mood disorders are effective, with **cognitive-behavioral therapies** and **interpersonal therapies** (i.e., relationship-focused approaches) appearing equally useful (Zhou et al., 2015). Individual and group approaches are both associated with good outcomes. With respect to cognitively oriented therapies, we need to remember that children and adolescents “span a broad range of cognitive ability and cognitive sophistication,” and to take these differences into account as we design individual interventions or use available treatment manuals (Weisz & Hawley, 2002, p. 29). Even with attention appropriately focused on cognitive variables, the impact of therapist empathy and the therapeutic alliance must also be appreciated (Kaufman, Rohde, Seeley, Clarke, & Stice, 2005).

Examples of cognitive and cognitive-behavioral interventions for adolescents include Weisz and colleagues’ primary and secondary control enhancement training (e.g., Weisz, Southam-Gerow, Gordis, & Connor-Smith, 2003), Lewinsohn’s Adolescent Coping with Depression Course (Rohde, Lewinsohn, Clarke, Hops, & Seeley, 2005), and the Adolescent Depression Empowerment

Project (ADEPT), focused on helping African American girls with depression (McClure, Connell, Zucker, Griffith, & Kaslow, 2005). Dialectical behavior therapy is associated with good outcomes for adolescents with bipolar disorder (Goldstein et al., 2015). Because sleep disturbances are frequently observed in both depressive disorders and bipolar disorders, strategies or techniques that target sleep are often included as part of a comprehensive intervention (Dewald-Kaufmann, Oort, & Meijer, 2014). For adolescents in psychosocial treatments, ongoing assessment of suicidality is imperative (Bridge, Barbe, Birmaher, Kolko, & Brent, 2005).

Interpersonal therapies for both children and adolescents address the salient age-related personal, social, and developmental issues in the context of topics such as loss, grief, and relationship difficulties (Jacobson & Mufson, 2010) and work well in both individual and group settings (Mufson, Gallagher, Dorta, & Young, 2004). Interpersonal approaches have also paid particular attention to cultural differences (Rossello & Bernal, 2005). Both cognitive behavior therapy and interpersonal therapies must include mechanisms designed to maintain improved functioning; in several studies, initial gains were not maintained at six-month follow-up (Horowitz, Garber, Ciesla, Young, & Mufson, 2007; Young, Mufson, & Davies, 2006).

Family Treatment

Both mothers and fathers may be especially powerful agents of change (Schock, Gavazzi, Fristad, & Goldberg-Arnold, 2002; Sherrill & Kovacs, 2002), with parent advocacy a key factor in new research and treatment (Hellander, 2003). Psychoeducational support and family-specific techniques are associated with decreases in children's distress and dysfunction (Fristad & MacPherson, 2014). Education may be especially critical for parents of children and adolescents with bipolar disorder (Miklowitz et al., 2004). The role of the family is also emphasized as we consider the ongoing need for maintenance treatment after initial improvements (Morris, Miklowitz, & Waxmonsky, 2007; West, Henry, & Pavuluri, 2007).

In addition, given the impact of poor marital relations on children's adjustment, marital therapy may be a useful adjunct intervention (Cummings et al., 2000). Finally, recognizing that parents of children with mood disorders also struggle to remain optimistic and effective, caregiver support is critical. There are many ways to provide that support, from individual counseling to internet groups (Hellander, Sisson, & Fristad, 2003).

Prevention Efforts

Prevention efforts have included studies targeting children of depressed parents, as well as samples of children with more general high-risk profiles (e.g., children of low-income families). For high-risk adolescents with a parent with bipolar disorder, a trial of Interpersonal and Social Rhythm Therapy (focused on stabilizing daily routines and sleep cycles) appears promising. Additional research is needed to identify whether this intervention prevents or delays disorder (Goldstein et al., 2014).

The Penn Resiliency Program (PRP), which focuses on the cultivation of optimism and coping skills in middle schoolers, has yielded positive outcomes (Gillham & Reivich, 1999, 2004). Other types of prevention emphasize the timing of therapeutic techniques to coincide with developmental milestones; the hypothesis is that children and their families may be more accepting of change-related opportunities when a transition period is underway (Gladstone & Beardslee, 2002). Another age-related option is to focus on preadolescent girls (Avenevoli et al., 2015). In some prevention research, ethnicity and culture appear to moderate effects, with data from a recent study suggesting that low-income Latino fifth and sixth graders exhibited more improvements than black fifth and sixth graders; these data highlight a need for more culturally specific therapy and strategies (Cardemil, Reivich, & Seligman, 2002).

Suicidality

"The young boy scrawled a note and pinned it to his shirt. Then he walked to the far side of the family Christmas tree and hanged himself from a ceiling beam. The note was short—'Merry Christmas'—and his parents never forgot or understood it" (Redfield Jamison, 1999, p. 73).

One of the saddest developmental trajectories ends with suicide. For most people, the idea that death is preferable to even the most difficult of life's struggles is hard to understand. It is even more awful when the individual who thinks about, or attempts, or completes suicide is a child or adolescent. Although suicide in childhood and adolescence is relatively rare, youth suicide is a major public health concern. For elementary school–aged children, suicide is rare, with stable rates over the last 20 years. The overall stability, however, masks important differences in trends for white children and black children. Suicide rates decreased significantly for white children, whereas rates increased significantly for black children (Bridge et al., 2015).

For adolescents, suicide rates are increasing, with suicide the third-leading cause of adolescent deaths.

According to the Centers for Disease Control and Prevention (CDC), a recent survey of high school–aged youth found that "16% of students reported seriously considering suicide, 13% reported creating a plan, and 8% reported trying to take their own life in the previous year" (CDC, 2016, http://www.cdc.gov/violenceprevention/suicide/youth_suicide.html). Adolescent boys have much higher rates of completed suicides than adolescent girls. Native American youth have the highest rates (Derbidge & Beauchaine, 2014). Attempted suicide is a much more frequent phenomenon than completed suicide, with adolescent girls attempting suicide at significantly higher rates than adolescent boys. And, heartbreakingly, most suicidal children and adolescents do not receive adequate mental health care (Husky, Olfson, He, Nock, Swanson, & Merikangas, 2012).

In order to understand some of the factors that predispose an adolescent to consider suicide, it is important to be clear about definitions related to suicidality. **Suicidal ideation** involves a variety of cognitions, from "fleeting thoughts that life is not worth living" to "very concrete, well-thought out plans for killing oneself" (Diekstra, 1995, p. 214). Depending on the specific research definition, estimates of suicidal ideation in adolescence range from 3.5% (when narrowly defined) to 53% (when broadly defined); throughout adolescence, more girls report suicidal thoughts than boys. **Parasuicide** includes many behaviors, from less dangerous gestures to serious but unsuccessful suicide attempts. The term *parasuicide* is increasingly preferred over *attempted suicide* because the motives and intentions of individuals are often difficult to identify. **Nonsuicidal self-injury (NSSI)**, or **self-harm**, overlaps with many kinds of parasuicide but can also be considered a distinct phenomenon (Derbidge & Beauchaine, 2014). Adolescents who display self-harm report different attitudes toward life and death and use different means of injury (e.g., cutting versus overdosing) from adolescents who exhibit parasuicidal behavior (Cha & Nock, 2014; see Box 12:2). **Suicide** involves a death that is the direct or indirect result of a positive or negative act of the victim. **Suicidality** is the construct that includes suicidal ideation, parasuicide, and suicide.

Many different variables increase the risk for suicidality in adolescents (Derbidge & Beauchaine, 2014). Genetic effects on persistent suicidal thinking, suicide attempts, and completed suicides are observed, with concordance rates for monozygotic twins higher than rates for dizygotic twins. Physiological processes that contribute to disinhibition, impulsivity, and aggression are all risk factors.

Psychological factors are among the most frequently investigated factors. One factor that has received a great deal of clinical and research attention is child or adolescent psychopathology. Psychopathologies linked to suicide include depressive disorders, bipolar disorders (especially when they are severe or comorbid with personality disorders), anxiety disorders, and externalizing disorders such as conduct disorder (Derbidge & Beauchaine, 2014). Substance abuse disorders may present a special risk, with most parasuicidal behavior preceded by alcohol use (Conner & Goldston, 2007; Derbidge & Beauchaine, 2014).

Variables related to identity, self-image, and self-esteem are also noteworthy contributors to increased risk, particularly with respect to lack of self-efficacy and hopelessness (Derbidge & Beauchaine, 2014; Rutter & Behrendt, 2004). Hopelessness is significant both for the development and maintenance of suicidality; shame and guilt, as well as a sense of being a burden to others, often exacerbate hopelessness (Joiner, Conwell, et al., 2005). According to Habermas and Bluck (2000, p. 754), "the drastic increase in suicide rates during adolescence may be a sign that adolescents start thinking about their whole life and its quality."

To the extent that adolescents cannot envision their own continuity through time, or that they believe that their continued existence will involve unremitting psychological pain, extreme decisions may occur. Adolescents' inability to communicate their ongoing struggles and their deeply felt pain, combined with hesitation about seeking help from others, further complicates difficult situations (Derbidge & Beauchaine, 2014). Adolescents who do turn to peers may not always receive appropriate help. Peers may misperceive intent or misjudge lethality (Dunham, 2004). Even when a friend is clearly struggling, peers do not always try to connect with parents or mental health professionals; peer support and assistance may be compromised by their own history of psychopathology (Dunham, 2004).

Previous suicidal behavior is a strong predictor of future suicidality (Derbidge & Beauchaine, 2014; Joiner, Conwell, et al., 2005). Past behavior appears to habituate individuals to the fear and pain of self-injury and underlies Joiner's (2002, 2005) **interpersonal–psychological theory of suicidality**. The theory proposes two general categories of risk: dysregulated impulse control and intense psychological pain. The idea is that adolescents "gradually acquire the ability to enact lethal self-injury through prior experience with self-injury (which in turn is encouraged by impulsive behavior underlain by serotonergic dysregulation) . . . ability not acted upon unless the desire for death is instantiated by a strong sense of perceived burdensomeness coupled with a sense of failed belongingness" (Joiner, Brown, & Wingate, 2005, p. 305).

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BOX 12:2

Clinical Perspectives

Self-Harm in Adolescence

Nonsuicidal self-injury (NSSI), also called *self-harm* or *self-mutilation*, is the deliberate, self-inflicted destruction of body tissue, outside of cultural norms, and without suicidal intent (Cha & Nock, 2014; Yates, 2004). Self-injurious behaviors include cutting, scratching, and burning. Broadly conceived, NSSI is thought to be a compensatory strategy for regulating emotional states and a maladaptive coping skill displayed in response to stress. NSSI likely serves a variety of psychological functions, such as reducing or blocking anxiety, as well as communicating with and engaging others (Brown, Comtois, & Linehan, 2002; Gratz, 2007). Although incidence rates vary considerably, it is clear that NSSI is a surprisingly common clinical problem, with lifetime prevalence for repeated NSSI estimated to be between 5% and 10% (Yates, 2004). These self-destructive behaviors peak in late adolescence and early adulthood, especially in psychiatric samples of individuals; as many as 21% of teens with a psychiatric diagnosis have been found to display NSSI (Cleary, 2000). Compared to adults, adolescents more frequently engage in NSSI behavior in the absence of suicidal intent (Cha & Nock, 2014). NSSI is frequently observed in connection with borderline personality disorder, eating disorders, dissociative disorders, as well as other psychiatric disorders (Vaughn, Salas-Wright, Underwood, & Gochez-Kerr, 2015).

As noted in Yates's (2004) comprehensive review, strong associations have been established among early trauma, dissociative processes, and later NSSI. Although not the only pathway to NSSI, considerable research has demonstrated that child sexual abuse is a powerful risk factor; other experiences of childhood adversity also heighten risk (Vaughn et al., 2015). Yates notes that sexual abuse readily evokes dissociative defenses, involves specific trauma to the body, and is generally accompanied by a lack of competent parenting.

In a more recent review, Yates (2009) describes three possible pathways toward self-injurious behavior. In the first, *the representational pathway*, children and adolescents develop representations of the self as defective, of others as malevolent, and of relationships as dangerous. In this pathway, NSSI is a means of self-punishment or a means of self-soothing in the absence of positive relationships. In the second, *the regulatory pathway*, maltreatment leads to poor integration of emotion and cognitive processing in children and adolescents and decreased capacity to self-regulate. In this pathway, NSSI involves dissociation and somatization as ways to regulate arousal or stress. In the third, *the reactive pathway*, underlying physiological systems related to arousal and regulation are negatively affected by early maladaptive experiences. In this pathway, NSSI is associated with positive physiological responses. The process by which some adolescents develop a strong association between NSSI behavior and emerging self-identity has also been noted as a powerful mechanism for maintaining these maladaptive behaviors over time (Glenn, Kleiman, Cha, Nock, & Prinstein, 2016).

One of the most compelling aspects of NSSI is that it usually occurs in the absence of physical pain (Stanley, Sher, Wilson, Ekman, Huang, & Mann, 2010). It is thought that NSSI may release neurochemicals (endorphins) that block pain and promote reinforcing feelings. This, along with the impulsive nature of the act, makes NSSI especially challenging to treat. Careful research (Nock & Prinstein, 2004, 2005) into the functions of NSSI indicates that it most often acts as an automatic negative reinforcer (stopping unwanted feelings), but sometimes acts as an automatic positive reinforcer (relieving feelings of numbness by eliciting other feelings).

There may be important group differences between individuals who tend to engage in mild forms of NSSI, and do so in the context of social groups, and those who engage in more severe forms of NSSI and for whom it is a more solitary behavior. Although a history of child maltreatment is strongly associated with all forms of NSSI, child abuse and neglect are even more likely to lead to more severe forms of NSSI (Yates, 2004).

In recognition of how widespread and varied the clinical presentation of NSSI is, therapeutic approaches are becoming more targeted and differentiated. For example, if NSSI is primarily serving a regulatory function, then alternative methods of managing the awareness and experience of emotions may be a focus of intervention. If the self-harming behavior is primarily maintained by social reinforcement, then therapeutic efforts focused on more appropriate and effective interpersonal communication may be utilized (Gratz, 2007; Nock & Prinstein, 2005). Also, as the neurophysiology of NSSI is better understood, the potential role for pharmacological treatments is being more aggressively explored (Villalba & Harrington, 2003).

In other words, in the context of adolescent impulsivity and psychological anguish, self-destructive behavior may escalate over time, culminating in suicide.

Environmental, familial, and sociocultural contexts of suicidal behavior are also noteworthy variables. Negative life events, such as loss, physical or sexual abuse, or failing academic performance, may require immediate attention. Interpersonal and relationship difficulties may be especially salient (Derbidge & Beauchaine, 2014). Different rates of suicidality have already been discussed. Loss of culture, entrenched poverty and racism, and other adversities all likely contribute to increased risk for minority youth.

The presence of suicidal "models" must also be considered. Models of parasuicidal behavior may include close relatives, a peer, or a celebrity. The role of the media in presenting information on suicide, particularly when news reports include details about specific individuals or methods, requires scrutiny (Shoval et al., 2005; Stack, 2005). Peer contagion and the fact that "impulsive and dysregulated individuals are likely to affiliate with deviant peer groups" make social reinforcement of nonsuicidal self-injury and suicidal behavior important to counteract (Derbridge & Beauchaine, 2014). Changes in the accessibility of suicide information on the internet and (in some cases) support for suicidal behavior is an increasing concern (Biddle et al., 2016).

Reducing adolescent suicidality involves multiple, coordinated efforts designed to identify at-risk individuals so that (1) suicide attempts and completions decline in frequency, and (2) adolescents who do attempt suicide receive immediate and ongoing treatment. With respect to prevention, general school-based education programs and staff training are viewed as more acceptable than schoolwide screening (Asarnow & Miranda, 2014; Scherff, Eckert, & Miller, 2005). Whereas universal screening may be interpreted as intrusive, there are also legal issues related to consent, confidentiality, and malpractice that must be taken into account (Judge & Billick, 2004). For adolescents contemplating suicide, telephone counseling has been shown to have an immediate positive impact (King, Nurcombe, Bickman, Hides, & Reid, 2003); publicizing such help lines in high schools, shopping malls, community centers, and on billboards may alert suicidal youth to easily accessible (and anonymous) support services.

Informational campaigns that raise adult awareness are also essential and may include lists of behaviors that increase adolescent risk (see Table 12:4). Programs designed to address the individual, family, and social factors that limit access to mental health services are critical components of any prevention plan and might usefully target the young men who are less likely to seek help and more likely to employ lethal means (Asarnow & Miranda, 2014). These types of resources are absolutely necessary, given that many studies report rates of up to 50% for suicide completions on a first attempt (Joiner, Conwell et al., 2005).

TABLE 12:4 Warning Signs of Suicidality

Change in eating and sleeping habits
Withdrawal from friends, family, and regular activities
Violent actions, rebellious behavior, or running away
Drug and alcohol use
Unusual neglect of personal appearance
Marked personality change
Persistent boredom, difficulty concentrating, decline in schoolwork
Frequent complaints about physical symptoms
Loss of interest in pleasurable activities
Not tolerating praise or rewards

From the American Academy of Child and Adolescent Psychiatry (2000).

Emergency management plans for adolescents who do attempt suicide are a priority. Inpatient admission is an option that should be considered. Successful outpatient treatments that bridge the crisis and recovery stages have been documented for both physiological and psychosocial therapies (Asarnow & Miranda, 2014). Lack of long-term treatment plans and noncompliance with treatment plans are problems that seriously hinder positive outcomes. Adolescents who repeatedly attempt suicide require even more aggressive care. Compared to those who attempt suicide only once, repeat attempters experience more anger, depression, and emotional dysregulation; these symptoms must be specifically targeted in treatment plans (Asarnow & Miranda, 2014). Connections between programs that seek to prevent both youth suicide and youth violence also require additional support and resources (Lubell & Vetter, 2006). What we do for the desperately troubled adolescents who are in every community is a reflection of our basic humanity. Providing school-based coping skills training, better screening, and the restriction of lethal means are first steps to lowering suicide rates.

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Key Terms

Major depressive disorder (p. 219)
Persistent depressive disorder (p. 219)
Disruptive mood dysregulation disorder (p. 220)
Cognitive vulnerability–stress model (p. 223)
Bipolar disorder (p. 224)
Mania (p. 224)
Hypomania (p. 224)
Kindling model (p. 228)
Rumination (p. 229)
Pathways of parental impact (p. 230)
Reinforcement model (p. 230)
Negative life events (p. 232)
Chronic hassles (p. 232)
Cognitive-behavioral therapies (p. 235)
Interpersonal therapies (p. 235)
Suicidal ideation (p. 237)
Parasuicide (p. 237)
Nonsuicidal self-injury (NSSI)/**self-harm** (p. 237)
Suicide (p. 237)
Suicidality (p. 237)
Interpersonal–psychological theory of suicidality (p. 237)

Chapter Summary

- Depression in childhood occurs frequently, can have long-term consequences, and is generally underrecognized and undertreated.
- The transition from childhood to adolescence is marked by the development of a coherent psychological identity that includes a sense of competence and self-esteem. These are among the core domains adversely affected by child and adolescent depression.
- Major depressive disorder in childhood and adolescence is characterized by sadness and loss of pleasure and is accompanied by cognitive, behavioral, and somatic symptoms.
- Persistent depressive disorder is a long-standing disturbance of mood and places the child or teen at significantly greater risk for developing major depression.
- Disruptive mood dysregulation disorder is a new type of depressive disorder included in DSM-5. It features developmentally atypical and severe temper tantrums and chronic negative mood and irritability.
- In younger children, depression often manifests itself in a depressed appearance, somatic complaints, anxiety symptoms, and externalizing behaviors. In teens, hopelessness, substance abuse, suicidality, and other serious symptoms are more common.
- Before adolescence, the rate of depressive disorders is generally the same for boys and girls. However, beginning in adolescence, the rate of depression is much greater for girls.
- Bipolar disorders are severe forms of mood disorder involving alternating periods of depression and mania. In adolescence, bipolar disorders generally present as they do in adulthood.
- There is significant developmental continuity of depressive disorders occurring in childhood, through adolescence, and into adulthood.
- Researchers are considering a range of genetic, neurological, life stress, and parenting risk factors in the development of depression.
- Genetic impact on the development of depressive disorders increases as children get older, most likely due to gene-by-environment interaction effects.
- Parent depression is an especially important and researched risk factor for the development of depression in childhood.
- Many children and adolescents with major depression have other psychopathologies as well, especially dysthymia and anxiety disorders.
- Recent research suggests that the combination of cognitive-behavioral therapy and medication is generally the most effective intervention approach in the treatment of more severe mood disorders in childhood and adolescence.
- Although still rare, adolescent suicide attempts and completions have steadily increased in recent decades.
- Although adolescent girls are more likely to experience suicidal ideation and to attempt suicide, boys far outnumber girls in terms of completed suicides.
- In addition to mood disorders, substance abuse is a significant risk factor for suicide among youth.

13

Eating Disorders

CHAPTER OUTLINE

Developmental Tasks and Challenges Related to Eating and Appearance

Eating Disorders

The Case of Elizabeth

The Case of Kayla

Developmental Course

Etiology

Genes and Heredity

Physiological Factors

Child Factors

Parent and Family Factors

Environmental Factors

Assessment and Diagnosis

Intervention

Prevention

Treatment

IN PREVIOUS CHAPTERS, we have considered how biological, psychological, and sociocultural processes interact and how they contribute to the challenges and achievements of typical development, as well as to the nature, progression, and treatment of disorders. This interplay among biology, psychology, and culture is particularly salient as we focus our attention on the relations between healthy and unhealthy eating, safe and dangerous practices for weight management, and clinically significant eating disorders. Because of the developmental status of older children and adolescents, their increasing independence, increased autonomy in food choice, and still not fully mature cognitive abilities, they are vulnerable to an array of eating problems. Given the significant public health issues related to eating disorders, it is crucial to understand the unique circumstances of adolescence and the ways in which eating disorders emerge and are maintained, because struggles with eating disorders may involve ongoing distress and impairment, as well as life-threatening crises.

Developmental Tasks and Challenges Related to Eating and Appearance

The physical development that occurs throughout later childhood and adolescence has multiple impacts on psychological development and functioning, with the onset of puberty signaling many of the most dramatic changes. Significant growth involves proportional increases in the food intake of nutrients and energy (Stang & Story, 2005). For girls, average weight gain is approximately 38 pounds over the course of adolescence, with associated increases in body fat levels. For boys, average weight gain is about 50 pounds, with a decrease in body fat levels. There are, of course, individual and group (e.g., ethnicity, country of origin) differences related to the beginning of puberty and weight gain; most black girls, for example, enter puberty earlier than most white girls (Marceau, Ram, Houts, Grimm, & Susman, 2011;

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Body image and body satisfaction are important developmental issues emerging and coalescing in middle childhood and early adolescence.

Stang & Story, 2005). Keep in mind, however, that the prevalence of weight issues and dieting in ever-younger samples suggests that body-related concerns are not exclusive to a particular age or stage of development.

One of the keys to understanding eating disorders depends on understanding issues related to body image and body satisfaction. **Body image** has to do with individuals' perceptions of their own physical appearance. **Body satisfaction** has to do with the degree to which individuals accept or are pleased with their physical appearance. Concerns about body image do not appear suddenly in adolescence. These concerns are present in elementary school and increase significantly from fifth to eighth grade (Lynch & Eppers-Reynolds, 2005).

Body image concerns have been studied mostly in girls and women; more recent studies include boys and men. Body satisfaction is relatively similar in younger girls and boys, with most children reporting satisfaction. By early adolescence, however, **body dissatisfaction** increases (Patalay, Sharpe, & Wolpert, 2015). Girls become more preoccupied, upset, and unhappy with their appearance and weight. Girls who are underweight are more satisfied with their bodies (Kelly, Wall, Eisenberg, Story, & Neumark-Sztainer, 2005). Boys who are dissatisfied are divided between wanting to lose weight and wanting to gain weight (or muscle) (Jones & Crawford, 2005; McCabe & Ricciardelli, 2004).

In a recent investigation of the relative impact of weight, race/ethnicity, gender, and age on body dissatisfaction in fourth- to sixth-grade children, the strongest predictor of body dissatisfaction was weight status. Obese children reported the highest levels of dissatisfaction. Asian-American children and girls also reported higher levels of dissatisfaction (Xanthopoulos et al., 2011). Another set of findings from a longitudinal study identified various combinations of risk factors for body dissatisfaction. In that study, both girls and boys who perceived themselves as late in pubertal development were more likely to report body dissatisfaction. Black girls reported less body dissatisfaction throughout the high school years; in contrast, Asian-American girls reported more body dissatisfaction at the beginning of high school, and that dissatisfaction increased over time (de Guzman & Nishina, 2014). Although differences in degree of body dissatisfaction are observed, body dissatisfaction may be experienced by individuals of all ethnic backgrounds (Bucchianeri et al., 2016).

Negative body image, body dissatisfaction, and concerns related to weight and appearance are observed across many countries and cultures, including Argentina, Australia, Chile, China, Cuba, Denmark, Guatemala, India, Iran, Israel, Norway, Panama, Peru, Taiwan, Tibet, and Turkey (Canpolat, Orsel, Akdemir, & Ozbay, 2005; Latzer, 2003; Li, Hu, Ma, Wu, & Ma, 2005; McArthur, Holbert, & Pena, 2005; Nobakht & Dezhkam, 2000; Page, Lee, & Miao, 2005; Ricciardelli, McCabe, Ball, & Mellor, 2004; Shroff & Thompson, 2004; Storvoll, Strandbu, & Wichstrom, 2005; Waaddegaard & Petersen, 2002; Wang, Byrne, Kenardy, & Hills, 2005; Ying & Hong, 2005). Findings from a large-scale comparative study in 26 countries across 10 world regions suggested that a combination of body-mass index and exposure to Western media predicted body dissatisfaction among women. Noteworthy cross-cultural differences were observed related to socioeconomic status (SES), with body dissatisfaction and desire for thinness more frequently reported in high-SES settings (Swami et al., 2010). Indeed, the largest differences in body size ideals are no longer between Western and non-Western cultures, but between high-SES and low-SES regions. The hypothesis is that both modernization and Westernization "bring cultural changes that promote a thin ideal" (Swami, 2015, p. 41).

The influence of society and the media on body image and body attitudes has been extensively researched

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(Derenne & Beresin, 2006; Levine & Murnen, 2009), and researchers have described the ways in which television, movies, magazines, and Web sites glamorize specific, narrow, and often unrealistic versions of beauty (e.g., very slender women's bodies and muscular men's bodies). Harrison and Hefner (2008, p. 381) suggest that media exposure "(1) normalizes dieting and excessive thinness, and (2) encourages young people to repeatedly evaluate their bodies, to find them wanting, and to engage in extreme dieting, overexercising, and other health-compromising behaviors."

Many investigations have distinguished between the awareness of ideals and attitudes about appearance, thinness, and beauty, and the *internalization* of such ideals and attitudes (Cafri, Yamamiya, Brannick, & Thompson, 2005; Jones, Vigfusdottir, & Lee, 2004). Studies of younger (11–12 years) and older girls (15–16 years) show that both groups are aware of sociocultural images and ideals; the older girls, however, are more likely to have internalized these images and ideals (Clay, Vignoles, & Dittmar, 2005; see Figure 13:1). According to Sherwood and Neumark-Sztainer (2001, p. 228), "media exposure does not cause, but reinforces, an unhealthy body image among vulnerable women." In other words, internalization is more important than awareness. And a recent investigation of genetic and environmental influences on thin-ideal internalization provides strong evidence that environmental factors best explain the increase in thin-ideal internalization observed across adolescence and into young adulthood (Suisman et al., 2014).

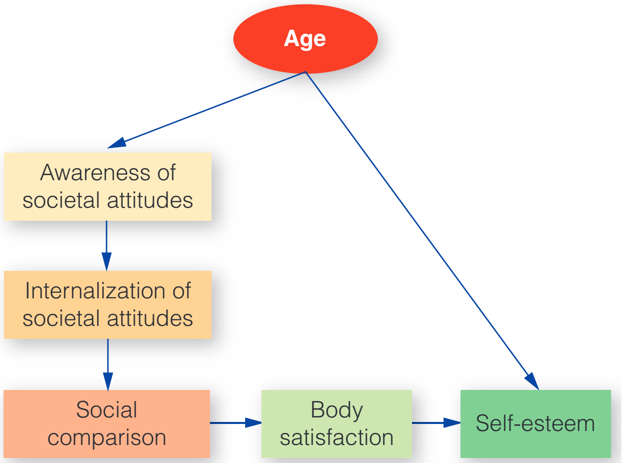
Age
Awareness of societal attitudes
Internalization of societal attitudes
Social comparison
Body satisfaction
Self-esteem

FIGURE 13:1 A conceptual model of proposed mediators of age trends in body satisfaction and self-esteem.

Source: D. Clay, V. L. Vignoles, & H. Dittmar (2005). Body image and self-esteem among adolescent girls: Testing the influence of sociocultural factors. *Journal of Research on Adolescence.* Reproduced with permission of Blackwell Publishing Ltd.

Eating Disorders

The Case of Elizabeth

Elizabeth is 17 years old and in eleventh grade. She is a successful student, has leadership positions on several service clubs, and is student editor of her high school's literary magazine. Elizabeth's grades have been outstanding, and her teachers consider her a bright and extremely conscientious student. Elizabeth is the only child of two affluent, professional parents who are both very involved in her academic and extracurricular activities. Elizabeth reports that she gets along well with her parents, but that she would like more independence than they seem comfortable with. Elizabeth's parents have noted that she has become increasingly withdrawn and even secretive, especially toward them, in the past year.

Although Elizabeth has had a very successful high school career thus far, junior high was a much more difficult time for her. Although she performed well academically, she had few friends and described feeling lonely and alienated. Her parents became concerned about her sad mood and noticeable weight gain in eighth grade and brought her to her pediatrician, who started her on an antidepressant. Within a few months of taking the medication and starting high school, Elizabeth was clearly happier, more energetic, and making more friends. Because of lingering concern over her weight, she began a very disciplined diet and program of running, resulting in the loss of 30 pounds over several months. Elizabeth received considerable attention and praise for these efforts from her parents and friends.

Elizabeth's sophomore year was successful, and her parents described her as happy and busy. The summer before her junior year, Elizabeth and her parents visited several colleges and she enrolled in a course to help her prepare for the SAT and ACT tests that she would be taking in her junior year. Her parents also hired a consultant to begin working with Elizabeth in preparation for applying to colleges in the fall of her senior year. The consultant helped Elizabeth plan her upcoming schedule, including advising her on what extracurricular activities would look best to the selective colleges that her parents were encouraging her to apply to.

Early in her junior year, Elizabeth's parents began to notice that her diet was increasingly restricted and that she seemed to avoid eating while out in public. Already quite thin when the school year started, Elizabeth began to lose weight at an alarming rate. She continued to run early in the morning before school and began to miss most

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family dinners. Her parents became increasingly worried as Elizabeth's appearance became gaunt and she admitted to them that she had not had her period in several months.

Throughout this time, Elizabeth continued to excel in school and her energy level seemed especially high. At home, however, Elizabeth was isolated, seldom speaking to her parents except to argue about her refusal to eat the food that her mother prepared. The only foods her parents ever saw her eat were yogurt and raw vegetables such as carrots and cauliflower. Also, despite being told by her parents and friends that she was too thin, she insisted that she was fat.

Over Elizabeth's objections, her parents brought her to their physician for a checkup. There, they learned that her weight had fallen to a dangerously low level and that she was experiencing clinically significant anemia and cardiac symptoms. Elizabeth was admitted directly to a medical inpatient unit for eating disorders. ■

The Case of Kayla

Kayla is 19 years old and a first-year student at a local community college. She lives in an apartment with several of her high school friends who are students at the same college. Kayla's time in high school was characterized by considerable variability in her academic performance. She did well early in high school but, following her parents' divorce in the middle of her sophomore year, she began to disengage from school. This was a stressful time for the family, as Kayla's mother made the transition to working full time while continuing to care for Kayla and her two younger siblings. She began to skip classes occasionally, failed to complete homework, and began hanging out with a new group of friends who smoked and drank and did not value academic activities.

After Kayla's promising start in high school, her guidance counselor became concerned about her missed classes and falling grades and met with Kayla and her mother toward the end of the year. That meeting led to a referral to her family physician and a mental health counselor. Kayla was treated for depression with medication and psychotherapy. She felt better, reconnected with old friends, and returned to school in the fall feeling more settled and focused. Over the next two years, Kayla did somewhat better, but she continued to have intermittent academic and social problems, although never to the extent that she did in tenth grade.

Early in her senior year of high school, Kayla became concerned about her body size and shape. She was slightly overweight, and a boy she was dating made some joking but rude comments about her "full and curvy" appearance. Kayla was very upset and made several unsuccessful attempts to lose weight. During this time, she also began to induce vomiting after hearing several friends talk about this as a way of controlling their weight. Soon Kayla was vomiting several times a day, generally at home but occasionally at school as well.

Kayla found herself thinking about food often; this made her feel very anxious. She found that the anxiety lessened considerably when she ate, although the relief did not last. In fact, once the initial pleasure wore off, eating made her feel more anxiety and shame. These feelings led her to induce vomiting to calm herself and keep from gaining more weight. Multiple times per day, Kayla was repeating a cycle in which she would binge on foods high in carbohydrates, such as cookies and ice cream, feel anxiety and guilt, and vomit. She began to buy food and hide it in her bedroom so that she could binge late at night, when everyone else was sleeping. Although the girls at school often talked about various ways of purging (e.g., vomiting, using laxatives, exercising), Kayla kept her behavior secret. Her weight fluctuated considerably, although it always returned to approximately the same as it was when Kayla's difficulties began. Although Kayla continued to meet periodically with her therapist throughout high school to talk about her parents' divorce and to get help with symptoms of mild depression, she never mentioned her binge eating and purging behaviors.

Once she was living in an apartment, Kayla found it more difficult to hide her binge eating and purging from her roommates. Although two of the women she lived with pretty much ignored the unusual behavior, one roommate expressed concern and told Kayla that she herself was currently being treated for bulimia in a group program at the college. She encouraged Kayla to meet with an eating disorders specialist in the counseling department. Eventually, Kayla agreed and began both individual and group therapy. ■

Eating disorders are psychopathologies characterized by severe disturbances in eating behaviors, disturbed perceptions of body size and shape, fear of being fat, and compensatory behaviors to lose weight or to prevent weight gain. Eating disorders are not a contemporary phenomenon; descriptions of eating-disordered behavior have been documented for centuries. Halmi (2009) provides a number of examples of notable historical figures (mostly women) whose severe food restrictions spiraled out of control. DSM-5's more current descriptions include several types of eating disorders.

TABLE 13:1 Anorexia Nervosa: Summary of DSM-5 Diagnostic Criteria

A. Restriction of energy intake, relative to requirements, leading to significantly low body weight in the context of age, sex, developmental trajectory, and physical health.

B. Intense fear of gaining weight or becoming fat, or persistent behavior interfering with weight gain, despite significantly low weight.

C. Disturbance in the way in which body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or persistent lack of recognition of the seriousness of the current low body weight.

Among the most common are **anorexia nervosa** (illustrated in the case of Elizabeth; also see Table 13:1), **bulimia nervosa** (described in the case of Kayla; also see Table 13:2), and **binge eating disorder**. Anorexia nervosa has two subtypes: a restricting type (without binge eating or purging) and a binge eating/purging type (with recurrent episodes of binge eating and purging). As summarized in Chapter 5, the DSM-5 section on eating disorders also includes **avoidant/restrictive food intake disorder**, a diagnosis that can be made across childhood and adolescence (see Table 13:3). DSM-5 also provides a residual category for eating disorders with atypical, mixed, or below-threshold presentations.

TABLE 13:2 Bulimia Nervosa: Summary of DSM-5 Diagnostic Criteria

A. Recurrent episodes of binge eating. An episode of binge eating is characterized by both of the following:
  1. Eating, in a discrete period of time, an amount of food that is definitely larger than what most individuals would eat in a similar period of time under similar circumstances.
  2. A sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control how much one is eating).

B. Recurrent inappropriate compensatory behaviors in order to prevent weight gain, such as self-induced vomiting; misuse of laxatives; fasting; or excessive exercise.

C. The binge eating and inappropriate compensatory behaviors both occur, on average, at least once a week for three months.

D. Self-evaluation is unduly influenced by body shape and weight.

E. The disturbance does not occur exclusively during episodes of anorexia.

TABLE 13:3 Avoidant/Restrictive Food Intake Disorder: Summary of DSM-5 Diagnostic Criteria

A. An eating or feeding disturbance (e.g., lack of interest in eating or in food; avoidance based on the sensory characteristics of food; concern about aversive consequences of eating) as manifested by persistent failure to meet appropriate nutritional needs associated with one (or more) of the following:
  1. Significant weight loss (or failure to achieve expected weight gain for full-term growth in children).
  2. Significant nutritional deficiency.
  3. Dependence on enteral (tube) feeding or oral nutritional supplements.
  4. Marked interference with psychosocial functioning.

B. Disturbance is not better explained by lack of available food or by an associated culturally sanction practice.

C. The eating disturbance does not occur exclusively during the course of anorexia nervosa or bulimia nervosa, and no evidence of disturbance in the way in which body weight or shape is experienced.

D. The eating disturbance is not attributable to a concurrent medical condition or better explained by another mental disorder.

Problematic eating behaviors include severe restricting of food intake or limiting food to particular types. Distorted body perceptions involve distorted body image or denial of the seriousness of weight loss. Compensatory behaviors include excessive exercising, vomiting, and/or laxative use. Other symptoms, such as obsessions and compulsive behaviors, are often displayed as well. Typical obsessions include concerns with somatic functioning; typical compulsive behaviors include rituals involving order and control. Although most of the research on the clinical picture of eating disorders has involved girls and women, there are data indicating that some aspects of the disorder may differ by gender. For instance, childhood body dissatisfaction predicts negative food-related cognitions in girls, but only in boys with high body-mass index (Micali et al., 2015).

Although there is both heterogeneity and considerable overlap in the clinical presentations of the various eating disorders, there are distinctive patterns of symptoms, developmental pathways, and outcomes. Anorexia nervosa is characterized by restriction of food and energy intake and significantly low weight, an intense fear of gaining weight, and disturbed or distorted perceptions of weight or shape. Bulimia nervosa involves recurrent episodes of binge eating, a sense or perception that one lacks control over binge eating, recurrent problematic compensatory behaviors, and poor self-evaluations of body shape and weight. Binge eating disorder is characterized by repeated episodes of binge eating, a sense or perception that one lacks control, and significant distress. Avoidant/restrictive food intake disorder involves an apparent lack of interest in eating or in food that is not associated with a drive for thinness. Individuals with avoidant/restrictive food intake disorder either avoid food or appear overly concerned with potentially adverse consequences of eating (e.g., nausea, stomach pain, or vomiting). Food avoidance may involve aversion to the texture or smell of food. Individuals with avoidant/restrictive food intake disorder display significant weight loss, nutritional deficiencies, and/or impaired psychosocial functioning (Norris et al., 2014; Norris, Spettigue, & Katzman, 2016).

Research into the subtypes of eating disorders continues, with important implications for identification, assessment, and treatment. Key issues include whether these subtypes are best understood as mostly dimensional or mostly categorical in nature, whether the number and structure of subtypes are similar across adolescence and adulthood, and/or whether subtypes are varied expressions of a common underlying pathology (the *transdiagnostic* approach) (Fairburn & Cooper, 2011; Gordon, Holm-Denoma, Smith, Fink, & Joiner, 2007; Swanson, Horton, et al., 2014; Williamson, 2007). At this point in time, the data suggest that the common experiences, symptoms, and impairment may be more salient than the differences observed in individuals diagnosed with various eating disorders.

The prevalence of eating disorders has increased over the past several decades. Prevalence rates are relatively high, despite the fact that many individuals with eating disorders are likely not identified or treated. Available statistics from the National Institute of Mental Health show overall prevalence rates of 2.7% for eating disorders for 13- to 17-year-olds, with girls two and a half times as likely as boys to have an eating disorder (Merikangas et al., 2010). Those rates are somewhat lower than other recent estimates for specific eating disorders: 1% for anorexia, 2.6% for bulimia, 3% for binge eating disorder, and 2.8% for atypical anorexia (Stice, Marti, & Rohde, 2013). Individuals diagnosed with avoidant/restrictive food intake disorder are somewhat younger than other eating-disordered individuals, with a higher proportion of males (Norris et al., 2014).

Christopher LaMarca/Redux

Anorexia nervosa can lead to dangerous levels of weight loss.

The average duration of an eating disorder episode was approximately three months for bulimia and 11 months for anorexia (Stice et al., 2013). It is important to note that *crossover* is common. For example, many individuals are first diagnosed with bulimia, and then cross over to anorexia. The most frequent crossover pattern is from binge eating disorder to bulimia (Stice et al., 2013). Individuals with avoidant/restrictive food intake disorder often cross over to anorexia (Norris et al., 2014).

Adolescents diagnosed with eating disorders are also frequently diagnosed with other psychopathologies. Depression and anxiety are common comorbid disorders. The combination of an eating disorder and depression is reflected in Elizabeth's case. There is also considerable overlap between eating disorders and bipolar disorder, and symptom similarities in terms of eating dysregulation, mood dysregulation, impulsivity, and compulsions (McElroy, Kotwal, Keck, & Akiskal, 2005). Self-harm and suicidality are primary concerns. Jacobson and Luik (2014) report that a majority of individuals diagnosed with an eating disorder also display nonsuicidal self-injury, with the highest rates observed in those with purging-type disorders. Connections between eating disorders and substance abuse disorders are widely described, especially for older adolescents and individuals diagnosed with bulimia (Halmi, 2009; Mann et al., 2014); these have led some researchers to hypothesize that, for some, eating disorders are addictions, with food as a mood-altering substance and ongoing cycles of food preoccupation, craving, and abuse despite negative consequences.

Developmental Course

Eating disordered behavior in childhood and adolescence predicts eating disordered behavior in adulthood, although there is a decline in prevalence and in severity (Herpertz-Dahlmann et al., 2015). Further, being diagnosed with an eating disorder in childhood or adolescence is associated with later risk of being overweight and worse mental health outcomes (Herpertz-Dahlmann et al., 2015). Eating disorder onset is most common at two times: early adolescence and late adolescence. These are two key developmental transition points. The first one marks the transition from childhood to adolescence, and the second is from adolescence to adulthood (Doyle, Smyth, & le Grange, 2012; Stice et al., 2013). Although most eating disorders emerge during adolescence, recent reports suggest that instances of middle- and late-life eating disorders are increasing; this phenomenon warrants additional attention (Scholtz, Hill, & Lacey, 2010).

Research suggests that multiple risk factors, including body dissatisfaction, perceived pressure to be thin, thin-ideal internalization, and negative affectivity, are already in place by puberty and escalate in impact over adolescence (Rohde, Stice, & Marti, 2015). These factors will be discussed in more detail in the upcoming etiology section. The developmental pathways of eating disorders are varied. Younger adolescents are more likely to present with symptoms of anorexia nervosa, and older adolescents are more likely to present with symptoms of bulimia. Many adolescents exhibit fluctuating courses of weight loss and gain, whereas others deteriorate over time and are repeatedly hospitalized (Peterson et al., 2012). As noted, crossover from one type of eating disorder to another is common. When identification and intervention occur earlier, the course of the disorder may be less severe and less chronic (Doyle et al., 2012; Le Grange & Loeb, 2007).

The psychological consequences of eating disorders include impairments in self-image, health, and social functioning (Graber, Tyrka, & Brooks-Gunn, 2003; Striegel-Moore, Seeley, & Lewinsohn, 2003), and, as described, the development of depressive disorders, substance abuse, and suicidality (Jacobson & Luik, 2014; Mann et al., 2014). The pathway from depression to eating disorder has also been observed, more often for the restrictive eating disorder subtypes (Herpertz-Dahlmann et al., 2015). In addition, there are immediate and long-term medical complications, such as biochemical, endocrine, hematological, and bone-related difficulties. The mortality rate for eating disorders is high (Chavez & Insel, 2007).

Etiology

Two of the most well known explanations of eating disorders are related to family factors and sociocultural factors. Critical analyses of these explanations are necessary in order to separate fact from fiction and to examine empirical data that support or refute these hypotheses. The idea that families create or foster eating disorders is most fully explored in psychodynamic explanations and is often associated with the psychodynamic theorists Hilde Bruch (1973, 1982) and Salvador Minuchin. Bruch observed eating disorders in "good girls"—girls who were characteristically compliant, achievement oriented, and attuned to pleasing others. Bruch asserted that the daughters in these families with indulgent, overinvolved parents lacked many of the basic skills of early childhood, such as the ability to distinguish among physiological sensations (e.g., hunger vs. exhaustion), the ability to differentiate emotional experiences (e.g., anxiety vs. irritation), and the ability to feel confident in one's body and oneself.

Minuchin's book *Psychosomatic Families* (Minuchin, Rosman, & Baker, 1978) described families who were "enmeshed," or too closely involved and controlling of one another. These dysfunctional families allowed little opportunity for child or adolescent autonomy, a stressful situation exacerbated by an atmosphere of overt nurturing and affection. With the developmental press for independence and self-definition associated with early adolescence, crises were inevitable. Without a well-defined sense of self, and without the ability to identify their own needs and desires appropriately, daughters sought control over themselves in any way possible. For some, the struggle played out in the form of eating disorders.

As might be expected, parents of adolescent girls diagnosed with eating disorders were "bewildered, blamed, and broken-hearted" (MacDonald, 2000) as they sought help for their children. And their confusion and upset was warranted because there is little or no empirical support in prospective studies for the causal impact of these psychodynamic family factors (Stice, 2002). A recent position paper from the Academy for Eating Disorders (Le Grange, Lock, Loeb, & Nicholls, 2010, p. 1) is quite clear: "It is the position of the Academy for Eating Disorders (AED) that whereas family factors can play a role in the genesis and maintenance of eating disorders, current knowledge refutes the idea that they are the exclusive or even the primary mechanisms that underlie risk. Thus, the AED stands firmly against any etiologic model of eating disorders in which family influences are seen as the primary cause of anorexia nervosa or bulimia nervosa, and condemns generalizing statements that imply families are to blame for their children's illness."

More recently, sociocultural models of eating disorders have become prominent. These explanations, briefly discussed in the opening section of this chapter on the developmental challenges associated with eating and appearance, begin with the near-constant presentation of images of actresses, fashion models, and Instagram celebrities with impossibly thin bodies and shapes. Internalization of this thin ideal, coupled with the pressure to be thin (coming from oneself, family, peers, and society), leads to body dissatisfaction, negative emotions, problematic dieting behaviors, and eating pathology. Indeed, research suggests that exposure to media images of the thin ideal, as well as peer pressure to be thin immediately, increases levels of body dissatisfaction. This is especially the case if girls are vulnerable in terms of already-present body dissatisfaction, perceived pressure to be thin, and lack of social support. According to Harrison and Hefner (2008, p. 381), the "thin-ideal media exposure may coax body image disturbance and disordered eating into expression by activating related cognitions and emotions." Given that the vast majority of adolescent girls and young women do *not* develop clinically significant eating disorders, however, a single-factor model is unlikely to capture the real-life complexity of eating disorders.

A biopsychosocial, multifactorial risk model provides a more nuanced explanation of the development of eating disorders (Le Grange et al., 2010). As we review the genetic and environmental factors here, keep in mind that both the number and pattern of risk factors likely influence an individual's vulnerability. In addition, it is important to know that many of the studies summarized here do not differentiate among subtypes of eating disorders; given the distinct symptom profiles of the various subtypes, it is likely that some of the patterns of risk and maintenance factors differ.

Genes and Heredity

Family and twin research suggests strong heritability for both anorexia and bulimia (Culbert, Racine, & Klump, 2015). The data are consistent with explanations that highlight common genetic factors underlying eating disorder symptoms, anxiety and depression, as well as explanations that emphasize distinct genetic factors for early symptoms of eating disorder. The data also emphasize that nonshared environmental factors (i.e., those factors that differentially influence siblings) are much more important than shared environmental factors (Culbert et al., 2015). Future work in this area is likely going to examine gene-by-environment effects and epigenetic processes.

Physiological Factors

Physiological studies provide additional perspective on the brain structures and mechanisms involved in appetite, food intake and satiety, and associated pleasure and reward (Berridge, 2009; Culbert et al., 2015). Data suggest abnormal activity in various regions of the brain, including the prefrontal and temporal lobes. Related research focuses on the role of the vagus nerve, dysregulation of the serotonin and dopamine systems, and elevated pain thresholds observed in adolescents with eating disorders (Culbert et al., 2015; Halmi, 2009). Some of the physiological factors that appear to be implicated are similar to those observed in individuals with certain mood disorders and substance abuse disorders, including dysregulation of eating and mood, impulsivity, and craving responses after exposure to food cues (Berridge, 2009; Halmi, 2009). These factors may be particularly salient for those adolescents and adults with more severe psychopathology. Halmi describes a physiological model that emphasizes allostasis. Extending a model originally designed to explain drug addiction (Koob & LeMoal, 1997), Halmi (2009, pp. 163–164) suggests that individuals diagnosed with anorexia or bulimia experience "a dysregulation of reward circuits with activation of brain and hormonal stress responses" and that these "changes in the entire brain-body system" underlie ongoing risk, chronic distress and impairment, and frequent relapses.

As noted, the onset of puberty is associated with increased risk. Part of that increased risk is linked to physiological maturation and hormonal changes (Harden, Kretsch, Moore, & Mendle, 2014; Klump, 2014). Early-maturing girls are at higher risk than later-maturing girls. The data are mixed on the impact of puberty timing for boys (Klump, 2014). For children who struggle with obesity in childhood, there are increased risks for restrictive eating disorders in adolescence. Even when weight loss is recommended, careful attention to the extent of weight loss, as well as potentially maladaptive outcomes, is necessary (Lebow, Sim, & Kransdorf, 2015).

Child Factors

Individual factors that influence the emergence of eating disorders have received a great deal of clinical and empirical attention. A cluster of biologically influenced personality characteristics have been identified that increase vulnerability. These include temperament, negative emotionality and emotion dysregulation, impulsivity, stress reaction and harm avoidance, and reward and punishment sensitivity (Crosby et al., 2009; Culbert et al., 2015; Peterson et al., 2010). The combination of negative emotionality and impulsivity, in particular, is connected to binge eating and purging (Culbert et al., 2015; Pearson, Combs, Zapolski, & Smith, 2012). With respect to distressing emotion experience, an inflexible emotion regulation repertoire is an additional risk factor (Zucker & Harshaw, 2012).

Perfectionism, involving setting impossibly high goals and experiencing a sense of failure and worthlessness when those goals are not met, appears to run in families and may lead to the "relentless pursuit of the thin ideal" (Bruch, 1973). Perfectionism is central to both etiology and maintenance processes (Culbert et al., 2015; Nilsson, Sundbom, & Hagglof, 2008).

Another cluster of personality characteristics is more psychodynamically informed (Caparrotta & Ghaffari, 2006), including variables related to self (Bers, Blatt, & Dolinsky, 2004; Eliot, 2004; Huprich, Stepp, Graham, & Johnson, 2004). For example, with respect to levels of agency, reflectivity, differentiation, and relatedness, Bers et al. (2004) report that individuals with anorexia described lower levels of agency and relatedness, as well as heightened and harsh self-reflectivity; these self-descriptions distinguish between individuals with anorexia and individuals without anorexia, as well as between individuals with anorexia and individuals with other disorders. Other variables in the psychodynamic framework involve atypical emotional development and functioning (such as a reluctance to express emotion or a tendency to experience a restricted range of emotion), with difficulties often traced back to early relationship interactions (Clinton, 2006; Sim & Zeman, 2004).

Body-related characteristics and attitudes are another set of risk factors, with body dissatisfaction at the nexus. As described in the previous section on developmental course, several risk factors are present before puberty and increase in salience across adolescence: perceived pressure to be thin, thin-ideal internalization, body-mass index, dieting, negative emotionality, and body dissatisfaction (Rohde et al., 2015). Perceived pressure to be thin exhibits the largest increase over time. General dissatisfaction with one's body emerges before rather than after perceived increases in the pressure to be thin, as well as before increases in body mass that occur postpuberty. Body dissatisfaction is the most consistent and strongest predictor of eating disorders later in life (Rohde et al., 2015).

Teasing appears to be a particularly important factor for both girls and boys (Eisenberg, Neumark-Sztainer, Haines, & Wall, 2006). A different type of body risk factor involves participation in weight-focused sports, such as gymnastics or running (Sherwood, Neumark-Sztainer, Story, Beuhring, & Resnick, 2002). The roles of gender identity and sexual orientation require further exploration. Lesbian-gay-bisexual-transgender-questioning (LBGTQ) adolescents are at increased risk for body dissatisfaction, problematic weight-related behaviors, and eating disorders (Calzo et al., 2015; Diemer, Grant, Munn-Chernoff, Patterson, & Duncan, 2015).

Parent and Family Factors

Parent and family factors have long been implicated in the development and maintenance of eating disorders. As noted, however, we need to be very careful how we evaluate these factors. It may turn out that an appreciation of bidirectional influences provides the most useful information. It is also likely that specific family factors are more salient for already vulnerable adolescents (Le Grange et al., 2010; Stice, 2002). One basic risk variable involves general family dysfunction. For instance, families with more problematic communication, more psychopathology, and more financial difficulties have adolescents at higher risk (Moorhead et al., 2003; Steinberg & Phares, 2001).

Perceptions of family functioning (versus actual family functioning) provide additional perspective. Daughters with eating disorders, for example, perceive more family dysfunction than their mothers, and this may be because of their feelings of inadequacy and distrust of others (Dancyger, Fornari, & Sunday, 2006). Examining some of the specific aspects of maternal and paternal behaviors may elucidate some of these more general findings. The relationships of mothers and daughters are a frequent clinical focus. Mothers' critical comments about weight and shape and the frequency of such comments appear to be more influential than family conflict (Cooley, Toray, Wang, & Valdez, 2008; Hanna & Bond, 2006).

Encouragement of dieting is also related to body dissatisfaction and drive for thinness (Cooley et al., 2008). The data on mothers' own modeling of eating pathology (e.g., emotional eating or restrictive eating) and negative body image are mixed (Cooley et al., 2008; Elfhag & Linne, 2005). Fathers who emphasize attractiveness and control food intake increase the risk of eating pathology (Dixon, Gill, & Adair, 2003). Fathers, as well as mothers and siblings, who tease daughters increase the likelihood of negative outcomes (Keery, Boutelle, van den Berg, & Thompson, 2005). Paternal rejection is an especially poignant risk factor (Rojo-Moreno, Livianos-Aldana, Conesa-Burquet, & Cava, 2006). There are, of course, protective family factors as well. Family connectedness, positive family communication, and parental monitoring all decrease the risk of eating disorders in adolescents (Fonseca, Ireland, & Resnick, 2002).

Environmental Factors

Negative life events (e.g., school transitions, death of a family member, relationship changes, home and job transitions, illness/hospitalization, and maltreatment) increase the risk for eating disorders and may trigger the onset of an eating disorder (Berge, Loth, Hanson, Croll-Lampert, & Neumark-Sztainer, 2012). As already described, media influences are also important risk factors. Media exposure clearly plays a role in increasing body dissatisfaction and internalization of the thin ideal (Carr & Peebles, 2012; Rodgers, McLean, & Paxton, 2015). Beyond media influence, a variety of culture-related factors likely influence the development of eating disorders. Anorexia nervosa is observed over time and across cultures, whereas bulimia nervosa is only observed in cultures with significant exposure to Western influences (Culbert et al., 2015). The specific mechanisms by which various Western influences have an impact have yet to be fully explained.

Assessment and Diagnosis

The assessment and diagnosis of eating disorders involves the developmentally informed evaluation of a complicated mix of somatic and psychological symptoms (Huemer, Hall, & Steiner, 2012). Assessment may be especially problematic because most adolescents with eating disorders deny difficulties (often vehemently) and avoid contact with medical or mental health professionals (Becker, Eddy, & Perloe, 2009; Collins & Ricciardelli, 2005). The development and maintenance of therapeutic engagement and alliance, therefore, are of the highest priority.

There are a number of well-validated structured interview and self-report measures for screening and diagnosis, although instruments need to be designed and interpreted with regard for differences in the clinical presentation of adolescents versus adults and with respect to ethnicity and gender (Couturier & Van Blyderveen, 2012). Because several of the diagnostic criteria for eating disorders involve cognitive symptoms, the diagnostic process must take into account age-related and cultural considerations. For example, "body experience and weight concerns may be difficult to formulate and express, in part because they are highly subjective, and in part because they are relative to social norms" (Becker et al., 2009, p. 616). In addition, given the different perspectives of adolescents and parents, particularly related to family functioning, parent reports should always be solicited. It is, of course, absolutely necessary for a comprehensive medical examination to be part of the assessment process.

There is some momentum to include a quick screen for eating disorders as part of well-child and other child and adolescent appointments with physicians (Lock, La Via, & the American Academy of Child and Adolescent Psychiatry Committee on Quality Issues, 2015). For those who respond to questions about eating behaviors, weight concerns, and body satisfaction with answers that raise concerns, more comprehensive evaluations can be provided. In all cases, it is important to identify and rule out multiple causes of weight loss, loss of appetite, and refusal to eat.

Intervention

Prevention

Interventions for eating disorders include both prevention and treatment. Prevention strategies frequently target some of the more malleable risk factors, including body dissatisfaction, negative emotion, and internalization of the thin ideal, and seek to strengthen some of the protective factors, such as self-esteem and social support (Neumark-Sztainer et al., 2006; Stice, Shaw, Burton, & Wade, 2006). School-based programs in both middle schools and high schools, as well as across ethnic groups, can be effective. These may focus on components of healthy eating and healthy dieting, self-esteem and perfectionism, and critical analysis of media images, and may specifically address teasing and harassment related to body weight and shape (McVey, Tweed, & Blackmore, 2007; Rodriguez, Marchand, Ng, & Stice, 2008; Wilksch, Durbridge, & Wade, 2008). Age 14 appears to be the key age for prevention efforts (Rohde et al., 2015). Peer-led prevention programs for older adolescents and college students have also received empirical support

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(Becker, Bull, Schaumberg, Cauble, & Franco, 2008; Becker, Smith, & Ciao, 2006). Prevention programs designed to reduce the prevalence of eating disorders are one important example of translational science. With information about effective programs readily available, mental health and public health advocates must identify opportunities to scale up programming to meet the increased need (Austin, 2016; Jacobi, Jones, & Beintner, 2012).

Treatment

Treatment models include inpatient hospitalization, partial hospitalization, intensive outpatient settings, and traditional outpatient settings. Current approaches provide multidisciplinary, comprehensive, and integrated treatments that address the medical and psychological issues of children, adolescents, and their family and peer contexts (Doyle et al., 2012; Haines & Neumark-Sztainer, 2006; Södersten, Bergh, & Zandian, 2006). Hospitalization remains essential for those with severe and life-threatening disorders. Both inpatient and partial hospitalization are aggressive forms of treatment that require considerable clinical skills on the part of mental health professionals who work with therapeutically challenging adolescents. With accumulating data on empirically supported outpatient treatments for eating disorders, it is increasingly the case that the primary function of hospitalization is medical stabilization. Beyond stabilization, inpatient treatment tends to be used only when outpatient treatments have been unsuccessful or are unavailable (Lock et al., 2015). Outpatient care is associated with greater client and parent satisfaction, as well as lower cost (Gowers & Bullock, 2012).

As noted, adolescents rarely initiate or compliantly accept treatment (Halmi, 2009; Sommers-Flanagan, Richardson, & Sommers-Flanagan, 2011). Even if treatment begins, dropout rates are high. Halmi et al. (2005) emphasize the need to proactively reach out to children or adolescents who seem to be especially likely to resist, disengage, or drop out. Characteristics of the therapist and the therapeutic alliance also take on added significance (Constantino, Arnow, Blasey, & Agras, 2005). As with all therapists working with children and adolescents with all kinds of psychopathologies, Stewart (2004) suggests that therapists who are nonjudgmental, neutral, and accepting are more likely to engage their eating-disordered clients.

Pharmacological treatments are relatively unexplored with adolescents (compared to adults), but there are numerous research projects underway. Most of the research is focused on the use of antidepressants and mood stabilizers. There is little evidence that pharmacological treatments are effective for restoring weight for individuals diagnosed with anorexia, and mixed data on the role of pharmacological treatments for reducing relapse rates and improving core features of eating disorders (Chavez & Insel, 2007; Lock et al., 2015).

Psychosocial interventions, including individual and family psychotherapies, are the treatments of choice (Lock et al., 2015). In general, current treatment trends include the use of family-based treatments for older children and adolescents and the use of cognitive-behavioral therapy for young adults. Family therapies are effective for adolescents with both anorexia and bulimia (Lock et al., 2015; Loeb, Lock, Greif, & Le Grange, 2010). In fact, “family involvement appears to be useful in reducing both psychological and medical morbidity, especially for younger patients with a short duration eating disorder” (Le Grange et al., 2010, p. 3). Parent participation is also associated with lower rates of dropout for adolescents (Le Grange et al., 2010).

The **Maudsley model of family therapy**, in which parents have a central role in treatment, has been the focus of much current research and has received much empirical support (Lock & Le Grange, 2005; Wallis, Rhodes, Kohn, & Madden, 2007). The Maudsley model is a “highly practical approach, which initially focuses exclusively on problems related to improving eating and promoting weight gain” (Lock & Le Grange, 2005, p. S64). In the early phase of treatment, parents have significant control over the adolescent’s eating; problems in family structure that make improvements in eating more difficult are addressed quickly. When eating and weight have improved, adolescents take more responsibility and control over eating. The last part of treatment focuses on the typical developmental challenges of adolescence (e.g., autonomy, sexuality) that may have an impact on continued progress.

Compared to individual treatments for adolescents with anorexia, family-based treatments were more effective in maintaining full remission of symptoms over time (Lock et al., 2010). Also, the more severe the clinical presentation, the greater the benefit associated with family-based treatments compared to individual treatments (Le Grange et al., 2012). In addition to family-based treatments, groups of parents whose adolescents are diagnosed with eating disorders benefit from parent training programs that provide both information and support for their own struggles (Holtkamp, Herpertz-Dahlmann, Vloet, & Hagenah, 2005; Le Grange et al., 2010; Zucker, Marcus & Bulik, 2006). A recent investigation of multifamily-based treatments examined the outcomes of immersive, intense five-day programs focused

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Regardless of the specific therapeutic approach, successful treatment of eating disorders depends on changing the individual's emotions and attitudes related to eating.

on psychoeducation and skills training. The positive outcomes suggest that effective family treatments may be able to be disseminated more broadly (Knatz et al., 2015).

The most common, empirically supported individual approach is cognitive-behavioral psychotherapy (Burton, Stice, Bearman, & Rhode, 2007; Chavez & Insel, 2007; Gowers, 2006). Most child- and adolescent-focused therapies target the distorted cognitions, disordered eating patterns, and self-efficacy concerns in specific developmental contexts (Fitzpatrick, 2012; Lock et al., 2015). Keeping in mind the role of body dissatisfaction in the etiology of disorders, cognitive-behavioral treatments that include specific techniques to reduce body dissatisfaction (e.g., positive role playing, challenging negative cognitions, generating positive self-statements) have the most positive outcomes (Rohde et al., 2015).

A specialized version, **cognitive behavioral therapy for eating disorders (CBT-E)**, is designed to address various forms of eating disorders and to match adolescents' and young adults' personalities and psychopathologies (Fairburn, 2008; Fairburn et al., 2009). The focus of CBT-E treatment involves identifying factors that maintain the eating disorder (in contrast to factors that influenced the development of the disorder), and helping individuals step back or distance themselves from their disorder so that they can understand it better. The initial stage of treatment involves engaging the patient, assessing the nature and severity of the disorder, education about eating disorders, and working together to devise an individualized treatment plan. The second and third stages involve reviewing progress and compliance and identifying ongoing barriers to change.

Examples of work in these stages might include exploring the evaluation of shape and weight and developing strategies to reduce the importance of shape and weight and develop other domains for self-evaluation. Additional work might focus on dealing with dietary rules, dietary restraint, or negative moods. The final phase emphasizes understanding and minimizing relapse and devising plans for dealing with setbacks.

Other common treatments for adolescents with bulimia focus more specifically on dieting and dietary restraint strategies. For those with bulimia, who often relapse and struggle with repeat cycles of binge eating and purging, and for those with binge eating disorder, dieting must be appreciated as a complex phenomenon (Stice, Martinez, Presnell, & Groesz, 2006; Wonderlich, Gordon, Mitchell, Crosby, & Engel, 2009). Although once thought to exacerbate the symptoms of bulimia, dieting actually improves the clinical picture (Stice, Presnell, Groesz, & Shaw, 2005). To the extent that early progress can be made, initial improvement often predicts the eventual outcome (Fairburn, Agras, Walsh, Wilson, & Stice, 2004). Relapse prevention can be addressed by having therapists pay special attention to an adolescent's higher level of initial preoccupation with food, greater ritualization of eating, and lower motivation for change (Halmi et al., 2002).

Interpersonal therapies, focused on changing the problematic relationships that trigger or maintain eating disorder symptoms, have received empirical support (Lock et al., 2015). Less prevalent, with fewer data to support them, are psychodynamic treatments for eating disorders. These tend to center on providing a safe space to explore painful emotions, construct self and identity, and explore early and current family relationships (Bryant-Waugh, 2006; Caparrotta & Ghaffari, 2006; Murphy, Straebler, Basden, Cooper, & Fairburn, 2012). Of course, it is essential to address comorbid disorders, including depression, anxiety, substance abuse, nonsuicidal self-injury, and suicidality (Jacobson & Luik, 2014; Mann et al., 2014).

Group interventions have also been widely used, with both positive and negative outcomes (Dishion &

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Stormshak, 2007; McGilley, 2006; Wolf & Sefferino, 2008). Groups enable children and adolescents to explore similar psychological factors underlying the emergence and maintenance of eating disorders (e.g., related to dysregulated emotion, distorted cognitions, and problematic behaviors), as well as parent, peer, and media influences on eating disorders. Peers in groups also provide specific kinds of support for recovery and examples of successful treatment. However, as with other forms of psychopathology (e.g., conduct disorders, substance abuse disorders), negative influences are also observed, with peers providing information about noncompliance and strategies for treatment sabotage (Dishion & Stormshak, 2007). This kind of negative influence is especially important to counter because it may be reinforced by numerous websites and other forms of social media that promote eating-disordered behavior as a lifestyle choice (Lapinski, 2006; Mulveen & Hepworth, 2006).

In the end, individual, family, and group treatments may each contribute to improvements in clinical presentation and better long-term outcomes. As with all psychopathologies, the overriding goal of treatment of eating disorders is to enable children and adolescents to capitalize on their strengths, to cope with inevitable difficulties, and to move forward with confidence and hope.

Key Terms

Body image (p. 242)
Body satisfaction (p. 242)
Body dissatisfaction (p. 242)
Eating disorders (p. 244)
Anorexia nervosa (p. 245)
Bulimia nervosa (p. 245)
Binge eating disorder (p. 245)
Avoidant/restrictive food intake disorder (p. 245)
Perfectionism (p. 249)
Maudsley model of family therapy (p. 251)
Cognitive behavioral therapy for eating disorders (CBT-E) (p. 252)

Chapter Summary

- Adolescence is a time of increased risk for all types of eating disorders.
- Weight gain in adolescence is generally accompanied by an increase in body fat for girls and a decrease in body fat for boys. Attitudes of body dissatisfaction increase during adolescence for both boys and girls.
- Core eating disorder symptoms include disturbed eating behaviors, body dissatisfaction and negative body perceptions, and compensatory behaviors in order to lose weight or prevent weight gain.
- Key symptoms of anorexia nervosa include a fear of being fat and extreme behaviors leading to weight loss. Binge eating and compensatory behaviors to prevent weight loss characterize bulimia nervosa, whereas binge eating disorder does not include the compensatory behaviors.
- The prevalence of eating disorders has increased in recent decades.
- Depressive disorders, anxiety disorders, substance abuse, and nonsuicidal self-injury commonly occur along with eating disorders.
- The peak onset of eating disorders is early adolescence for anorexia and late adolescence for bulimia. Compared to anorexia or bulimia, binge eating disorder has a later onset.
- The biopsychosocial model of eating disorders emphasizes the interaction of genetic, physiological, personality, and family factors in the development and maintenance of eating disorders.
- Negative emotionality and emotional dysregulation are personality characteristics with particular salience for eating disorders.
- Negative life events increase the risk for eating disorders and also may precipitate the onset of an eating disorder.
- Once established, many forms of eating disorders are relatively resistant to treatment. Severe and life-threatening forms often require hospital-based programs for medical stabilization.
- Current treatment trends include the use of family-based treatments for older children and adolescents, and the use of cognitive-behavioral therapy for young adults.
- An important component of all treatment models is a focus on healthy attitudes toward food and eating, as well as improved coping skills.

14

Substance-Related Disorders and Transition to Adult Disorders

CHAPTER OUTLINE

Developmental Tasks and Challenges Related to Brain Development and Self-Regulation

Substance-Related Disorders

The Case of James

The Case of Lara

Developmental Course

The Gateway Hypothesis, Common Liability to Addiction Model, and Developmental Cascade Models

Etiology

Genes and Heredity

Physiological Factors

Child Factors

Parent and Family Factors

Peers and Sociocultural Factors

Assessment and Diagnosis

Intervention

Prevention

Treatment

Psychotic Disorders in Adolescence and Young Adulthood

The Case of Luke

BOX 14:1 EMERGING SCIENCE: The Transition to Psychosis

Personality Disorders in Adolescence and Young Adulthood

Closing Comments

ALONG WITH THE EMERGING capacities and abilities of adolescence come new domains of risk. Compared to their younger selves, adolescents get into trouble in any number of new and more dangerous ways. Driving recklessly, becoming sexually active, gambling, and using drugs and alcohol are common forms of risk taking that are frequently observed as adolescents explore adult behaviors and adult roles. Some of these behaviors are associated with mortality in adolescents: accidental death (including car accidents), homicide, and suicide. Given this increased vulnerability, it is important to think intentionally about how to provide the best mix of direction, support, and safety nets for the adolescents we care so much about. Additional concern is also warranted because some patterns of distress and dysfunction observed in adolescence are increasingly likely to be associated with adult disorder and chronic impairment. We consider developmental pathways to two types of adult disorder in the latter half of this chapter.

Developmental Tasks and Challenges Related to Brain Development and Self-Regulation

It is abundantly clear that critical changes in brain structure and function and in brain–behavior relationships take place across adolescence and early adulthood. In order to provide context for thinking about those changes, we summarize Casey and Caudle's (2013) revisions of several familiar overgeneralizations about teenage brains. The first overgeneralization is that adolescents are incapable of making good decisions. Casey and Caudle clarify that adolescents are capable of good decision making, of course, but they make better decisions in low-emotion situations than they do in high-emotion situations. The second overgeneralization is that adolescents have no functional prefrontal cortex. Casey and Caudle acknowledge that brain maturation is complex and incomplete, but they emphasize that many self-regulatory processes that depend on prefrontal cortex functioning are actually in place from birth. The third overgeneralization is that every adolescent experiences years of "storm and stress." Casey and Caudle suggest, instead, that while many personal, social, academic, and other changes accompany adolescence, most adolescents display good adjustment in these everyday challenging circumstances.

With this context in place, we can examine several changes in brain structure and function that are key to understanding self-regulation and risk taking in adolescence. Although many brain regions and circuits display changes reflecting growth, pruning, and increased efficiency, a great deal of research and clinical attention is focused on the ongoing maturation of the prefrontal cortex (PFC). The PFC is involved in multiple psychological processes, including the regulation of cognition, emotion, and behavior (Luciana, 2013). The dorsolateral PFC has connections to brain regions that are involved with executive functions such as planning, inhibitory control, and working memory. The ventromedial PFC has connections to the limbic and striatal regions that are involved with reward processing and reward-based decision making. What is especially noteworthy in adolescence is the relative balance (or imbalance) between the prefrontal regions associated with executive control and the regions associated with reward seeking (Casey & Caudle, 2013; Luciana, 2013).

Changes in reward-related neural circuitry in adolescence are associated with increased sensitivity to rewards and incentive motivation (Galvan, 2013; Luciana, 2013). **Incentive motivation** is observed when adolescents seek out experiences in pursuit of reward or positive reinforcement (see Figure 14:1). With a less mature executive

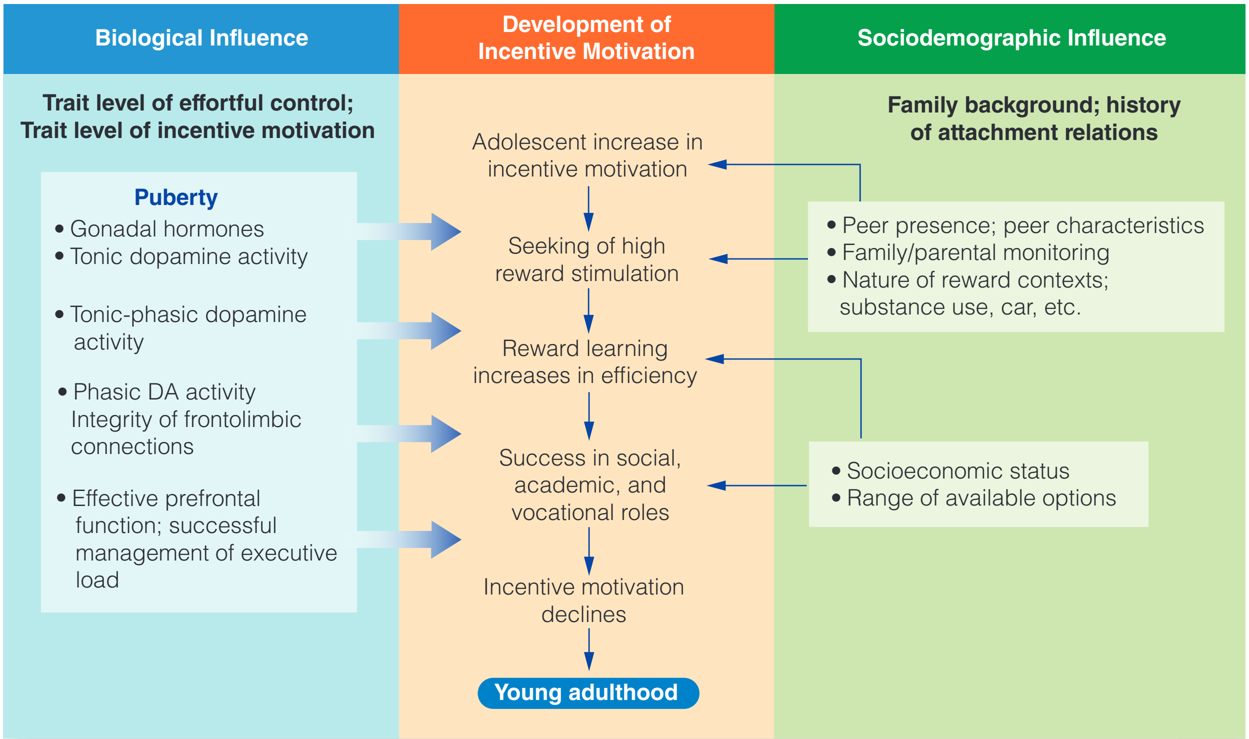
Biological Influence
Development of Incentive Motivation
Sociodemographic Influence
Trait level of effortful control; Trait level of incentive motivation
Puberty
• Gonadal hormones
• Tonic dopamine activity
• Tonic-phasic dopamine activity
• Phasic DA activity Integrity of frontolimbic connections
• Effective prefrontal function; successful management of executive load
Adolescent increase in incentive motivation
Seeking of high reward stimulation
Reward learning increases in efficiency
Success in social, academic, and vocational roles
Incentive motivation declines
Young adulthood
Family background; history of attachment relations
• Peer presence; peer characteristics
• Family/parental monitoring
• Nature of reward contexts; substance use, car, etc.
• Socioeconomic status
• Range of available options

FIGURE 14:1 Biological and contextual influences on incentive motivation in adolescence.

From Luciana (2013). Adolescent brain development in normality and psychopathology, Development and Psychopathology, 25, p. 1339.

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control system, adolescents are more likely to engage in reward-seeking behaviors that are risky or impulsive. The process of working through multiple self-regulatory successes and failures is important. According to Luciana (2013, p. 1333, italics in original): "Perhaps there is a *necessary* amount of executive load, part of which involves an increase in incentive motivation, which must be experienced so that the adolescent can learn effective self-regulatory skills. The neural systems that mediate affect and motivation and the prefrontal systems that direct these processes to be most adaptive must *learn*, through exposure to uncertain environments and associated challenges, to functionally couple."

In addition to these changes in the PFC, reward-related circuitry, and incentive motivation, there are other important developments related to brain structure and function, brain–behavior relationships, and physiological functioning. Connections within and between brain regions exhibit increased organization and efficiency over time. Atypical variations in connectivity, or disrupted connectivity development, may be a risk factor for adolescent-onset disorders such as schizophrenia (van den Heuvel & Fornito, 2014; Whitaker et al., 2016). Stress-sensitive brain regions and circuits are also influenced by shifts in hypothalamic-pituitary-adrenal (HPA) axis reactivity, with changes observed in both the activation and feedback phases (Romeo, 2013). And changes in the socioaffective circuitry are associated with the increased salience of peers, the increased reward value of peers, and increased sensitivity to social evaluation (Albert, Chein, & Steinberg, 2013). These brain-behavior connections reflect the "heightened capacity to detect, learn from, and adapt to the myriad social challenges characteristic of adolescence, ultimately facilitating mature social competence" (Somerville, 2013, p. 125).

Self-regulation, decision making, and risk taking are best understood in the context of multiple factors: brain development, individual characteristics and personality development, and social development. As noted, risk taking is the behavioral outcome that follows the interplay of executive functions and reward-seeking motivations. Risk taking also must be situated in the context of adolescent identity formation, the sampling of adult behaviors coupled with freedom from adult responsibilities, and the increasing influence of peers (Hollenstein & Lougheed, 2013; Sussman & Arnett, 2014). The social primacy of peers, for instance, is evident in the increased risk taking that occurs in social situations (Albert & Steinberg, 2011; Ernst & Hardin, 2010). Looking ahead to emerging adulthood, we keep in mind that the salient developmental tasks of adolescence are likely to be reexperienced and resolved in somewhat different ways over time. Issues related to identity, relationships, and love and work are embedded in our experiences of health and well-being across the lifespan.

Substance-Related Disorders

The Case of James

James is a 15-year-old high school sophomore in the largest town in a rural area. James moved to this community as a ninth grader when his father started a new job. He was an average student through junior high school, although his impulsivity and sporadic oppositional behavior created conflict with his teachers. James left behind a large network of friends and family when he moved, and he found himself somewhat isolated in his new school. There were fewer peers who appreciated his quirky sense of humor and fewer opportunities to share his appetite for ethnic foods and music. Toward the end of ninth grade, James began working at a local movie theater and met several boys about to graduate from high school. Over the summer, he hung out with these friends after work and drank beer with them. When school started in the fall, James quit his job but continued to get together with these friends for parties that included drinking and, occasionally, other drug use. Although he did not try these other drugs, which he viewed as dangerous, he did drink heavily. During the first semester of school, James slept through several morning classes and two exams after late-night parties.

Although uncomfortable with his spending time with these older teens and concerned by his poor school performance, James's parents hesitated to limit his contact because these seemed to be the only friends he had. When they first suspected that James was drinking with this group, James's mother was quite upset, but his father saw the behavior as "normal teenage guy stuff." However, when they began to notice liquor missing from their home, they agreed that James's drinking was a problem. They told James that he could not get his driver's license until he agreed to see a counselor and stop drinking. ■

The Case of Lara

Lara is an 18-year-old senior attending an alternative high school for students who have struggled in traditional school environments. She began high school at a large, very competitive suburban high school. Both of her parents are successful professionals; her older brother was class valedictorian and currently attends a prestigious university.

Lara was not only a bright and engaging child, but also very strong-willed and stubborn. She began smoking cigarettes with her friends in seventh grade and was caught drinking with these same friends several times in eighth grade. Upset by these discoveries and Lara's insistence that nothing was wrong, Lara's parents sought mental health counseling several times (with individual sessions for Lara as well as family sessions), but a pattern emerged in which either Lara or her parents came to view the therapists as either unhelpful or incompetent. Multiple therapies were ended without much positive change.

By the time Lara started high school, she was smoking marijuana as well as drinking. By the end of ninth grade, however, many of her friends decreased their drug use as they became more involved in academics and cocurricular activities. Lara's drug use, in contrast, increased in both severity and variety. Although unaware of her escalating drug use, Lara's parents became increasingly concerned as her grades dropped and the school administrator contacted them about repeated truancy.

Lara was skipping school and driving to the apartment of friends who attended a local college. In addition to alcohol and marijuana, Lara was beginning to experiment with synthetic psychoactive drugs such as Ecstasy and prescription narcotics such as Oxycontin. Midway through her junior year, she was failing almost all her classes and her health was deteriorating. With the combined insistence of her parents and a therapist, Lara again began—but never completed—several outpatient drug treatments. Typically, she would initially cooperate, but she found staying sober physically and psychologically intolerable; she would quickly fall back into a pattern of drug and alcohol use. Late one night, returning from a dance club, Lara was driving erratically and had a minor accident. She had been drinking before going to the club and had later taken Ecstasy. The police were called; in addition to determining that she was driving while intoxicated, they found other drugs in her car and filed further charges. Lara agreed to enter an inpatient drug treatment program for adolescents. She started at the alternative high school when she was discharged. She likes the school, attends regularly, and feels understood and supported by the staff. Lara is actively attempting to avoid another relapse, but she acknowledges that it is extremely difficult because she still feels that "the only time I am really happy and alive is when I'm high." ■

The cases of James and Lara illustrate just two of the many clinical presentations of adolescent substance abuse and dependency that depend on definitions of use, abuse, tolerance, dependence, and addiction. *Use* is defined as ingestion of a substance. *Experimental substance use* involves trying a drug once or a few times, often related to curiosity or peer influence. *Social substance use* occurs during social events with one or more peers. Parties, concerts, dances, and athletic events are common settings for this type of use. *Abuse* is defined as excessive use of or dependence on an addictive substance. Individual differences in the progression from use to abuse are noteworthy, with some adolescents transitioning slowly, others rapidly, and still others not at all.

Tolerance occurs when the central nervous system (CNS) gradually becomes less responsive to stimulation by particular drugs. Individuals then need to ingest higher and higher doses to achieve the same CNS effects. **Physical dependence** involves susceptibility to withdrawal symptoms; it occurs only in combination with tolerance. **Withdrawal symptoms** are noxious physical and psychological effects caused by reduction or cessation of substance intake (e.g., sleep disturbances, headaches, nausea and vomiting, tremors, restlessness, anxiety, and depression); these symptoms can range from relatively mild to life-threatening. **Psychological dependence** involves a craving or compulsion to use despite the likelihood of significant negative consequences, and it is not always accompanied by withdrawal symptoms. Distinctions between abuse and dependence are often tied to specific substances and their CNS effects. Impairment provides another key diagnostic criterion, with the presence of immediate negative consequences (missed classes or work, failed relationships). **Addiction** is defined as a chronic disorder characterized by compulsive drug seeking and abuse, physiological effects, loss of control over the urges to use drugs, and impairment.

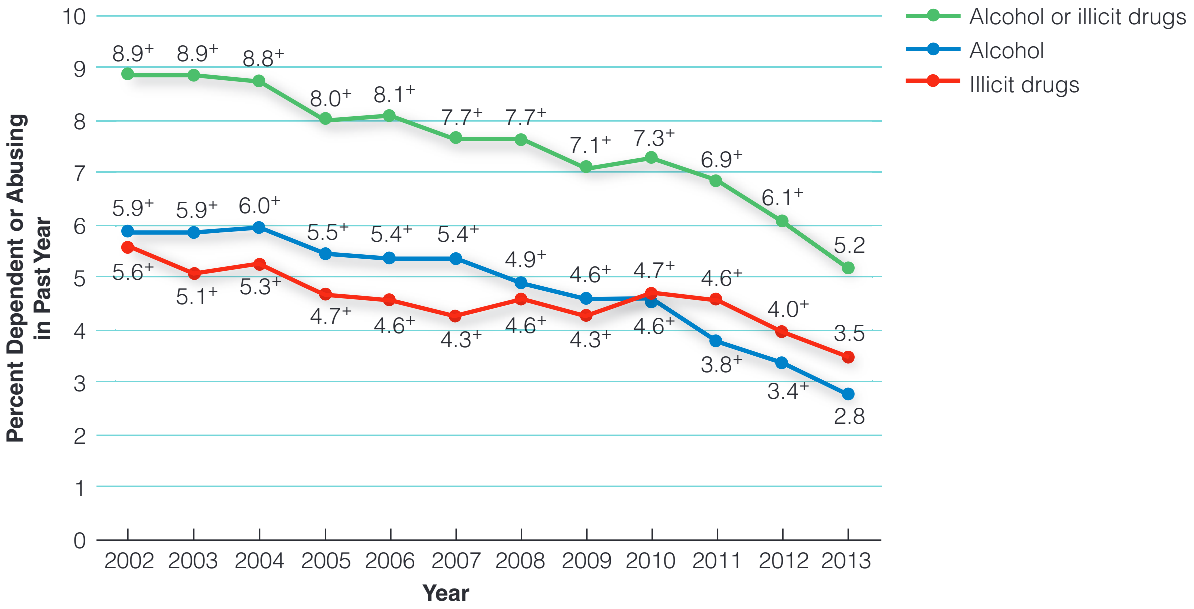
DSM-5 describes many categories of substance use and addictive disorders. They include alcohol-related disorders, cannabis-related disorders, hallucinogen-related disorders, inhalant-related disorders, opioid-related disorders, stimulant-related disorders, and tobacco-related disorders. Depending on the specific substance, there are subtypes related to use, intoxication, and withdrawal. Gambling disorder is another category in this group of disorders. Additional research is recommended for the provisional category of Internet use disorder.

There are multiple ongoing surveys of adolescent alcohol and drug use in the United States. Some of the most recent data disseminated by the National Institute on Drug Abuse (NIDA; www.nida.nih.gov) and the

Substance Abuse and Mental Health Services Administration (SAMHSA; www.samhsa.gov), based on the 2010 and 2013 National Survey on Drug Use and Health and the 2011 and the 2015 Monitoring the Future studies (www.monitoringthefuture.org), show that rates of substance use declined from the late 1990s until the mid- to late 2000s, but have recently increased, largely due to the increasing popularity of marijuana. Legalization of marijuana (for medical or recreational use) in several states has also increased the drug's availability and use (NIDA, 2016; https://www.drugabuse.gov/publications/drugfacts/marijuana). Positive trends reported in the 2015 Monitoring the Future study included lower use rates for alcohol, cigarettes, Ecstasy, inhalants, cocaine, and heroin. Figure 14:2 provides an illustration of rates of alcohol and drug use by adolescents between 2002 and 2013.

Adolescent boys are more likely to use almost every substance more than adolescent girls and to use those substances more frequently (Schulenberg, Patrick, Maslowsky, & Maggs, 2014). This gender difference is less noticeable in the early years of high school and increases over time. Younger adolescents from low socioeconomic status (SES) backgrounds use most substances more often than younger adolescents from higher-SES backgrounds. By the end of high school, however, higher-SES youth catch up and exceed their peers in alcohol use. Black youth tend to display the lowest rates of use across adolescence. Latino youth have the highest rates at the beginning of high school and white youth have the highest rates at the end of high school (Schulenberg et al., 2014). Compared to adolescents in Europe, adolescents in the United States exhibit lower rates of alcohol and cigarette use and higher rates of marijuana and other drug use (Schulenberg et al., 2014).

Rates of heavy drinking vary by age: less than 1% for youth between 12 and 15; 2.7% for youth between 16 and 17; 8.5% for youth between 18 and 19; and 13.1% for young adults between 20 and 25. Rates of **binge drinking** also vary: less than 1% for youth between 12 and 13; 4.5% for youth between 14 and 15; 13.1% for youth between 16 and 17; 29.1% for youth between 18 and 19; and 43% for young adults between 20 and 25. Rates of heavy drinking are similar for adolescent boys and girls; binge drinking is more common in adolescent boys. Frequent use of alcohol is associated with the use of other drugs (SAMHSA, 2014). Clearly, the transition to young adulthood does not signal a lessening of alcohol misuse. Drinking in college students, for example, is widespread and problematic. Numerous public safety and college initiatives focus on decreasing consumption and preventing some of the most tragic personal and interpersonal consequences of alcohol abuse by college students.



+ Difference between this estimate and the 2013 estimate is statistically significant at the .05 level.

FIGURE 14:2 Alcohol and illicit drug dependence or abuse among youths aged 12 to 17: 2002–2013

Source: Results from the 2013 National Survey on Drug Use and Health: Summary of National Findings

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Binge drinking by college students is a significant risk factor for academic problems, impulsive and self-destructive behavior, and interpersonal aggression and violence.

As noted, rates of marijuana use have increased over the past several years. With legalization in more states, rates are likely to continue to rise. The active chemical in marijuana is delta-9-tetrahydro-cannabinol (THC), and the amount of THC in marijuana has risen dramatically over recent decades. THC attaches to cannabinoid receptors in many brain areas. Its use is associated with both short- and long-term physical impairments. The frequent use of synthetic marijuana is a major concern because it is wrongly perceived as a safe alternative (NIDA, 2012).

There are a number of other commonly used illicit substances that may lead to a diagnosis of a substance-related disorder. These include inhalants, cocaine, methamphetamine, hallucinogens, heroin, and prescription drugs. Inhalant use peaks between seventh and ninth grades, with sustained use more frequent in boys. Indeed, the most serious inhalant abuse is exhibited by children and adolescents who have little access to alcohol or other drugs. Cocaine is a powerfully addictive drug; tolerance and craving are frequently observed. Single or repeated use may result in cardiovascular, respiratory, and neurological complications. Methamphetamine is a potent stimulant drug that has become increasingly widespread and extraordinarily problematic. It has a similar drug structure to amphetamines, but more dramatic and more toxic effects on the central nervous system. Dissociative drugs such as phencyclidine (PCP) affect the neurotransmitters glutamate and dopamine, also with unpredictable effects. With characteristics and effects overlapping stimulant and psychedelic drugs, 3,4-methylenedioxymethamphetamine (MDMA, also known as Ecstasy) is another abused substance, often used in combination with alcohol or marijuana. Its use is associated with increases in feelings of well-being, increases in emotional and sensory perception, and decreases in anxiety. Ecstasy's effects occur via neurotransmitter systems, with immediate life-threatening consequences for some individuals and long-term complications for others (such as damage to serotonin-containing neurons) (NIDA, 2006). Heroin is another highly addictive substance; it is the most rapidly acting and most abused of the opiate class of drugs.

Prescription drugs are also increasingly abused by adolescents; increased initiation rates for nonmedical use of prescription drugs are second only to initiation rates for marijuana (SAMHSA, 2014). The most commonly abused prescription drugs are pain medications, medications that depress the central nervous system, such as those prescribed for anxiety and sleep disorders, and stimulants, such as those prescribed for attention

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Prescription drugs, relatively easy to obtain, are increasingly abused by adolescents.

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deficit/hyperactivity disorder (ADHD) (NIDA, 2012; SAMHSA, 2014). Approximately 5% to 10% of high school seniors used prescription drugs for nonmedical reasons in 2011 (NIDA, 2012; SAMHSA, 2014).

Many connections between substance-related disorders and other psychopathologies have been documented. In community studies, approximately two-thirds of adolescents who use or abuse substances also meet the diagnostic criteria for another psychiatric diagnosis (Lansford et al., 2008). Externalizing disorders are more common, although internalizing disorders are also frequently observed (Beesdo, Knappe, & Pine, 2009). Externalizing disorders, depression, and histories of maltreatment are common in both adolescent boys and girls. Anxiety disorders and suicidality are more frequent in girls, with current research emphasizing especially vulnerable groups of adolescents at risk for multiple psychopathologies (Schulenberg et al., 2014).

Gambling is another risk-taking behavior that is increasingly viewed as a public health issue. Most high school students report gambling experiences (Simmons, Whelan, Meyers, & Wickwire, 2016). Adolescent boys gamble more frequently and problematically than adolescent girls. Ethnic minority adolescents may be at higher risk for gambling problems (Simmons et al., 2016). Early onset of gambling is associated with other problems such as substance abuse (Desai, Maciejewski, Pantalon, & Potenza, 2005). Many instances of adolescent gambling occur on the Internet, and this and other types of Internet addiction are observed across countries and cultures (Johansson & Götestam, 2004; Kaltiala-Heino, Lintonen, & Rimpela, 2004; Ko, Yen, Chen, Chen, & Yen, 2005).

Developmental Course

Substance-related disorders rarely resolve on their own (Maggs & Schulenberg, 2005; Schulenberg et al., 2014). It is necessary, then, to understand the developmental context of use and abuse: How and why do adolescents begin to use drugs, and what factors underlie continued use? There are multiple distinct trajectories for alcohol, marijuana and tobacco, including early-onset, rapid-onset, and escalating pathways that increase the risk for poor adolescent and adult outcomes (Nelson, Van Ryzin, & Dishion, 2015).

With respect to initial use, there are two periods of highest vulnerability: during early adolescence and during the transition to young adulthood. Early users are at higher risk for poor outcomes. Substance use in early adolescence often involves a number of immediate negative consequences, including academic struggles, social problems, and the less successful resolution of typical developmental challenges related to self and identity (D'Amico, Ellickson, Collins, Martino, & Klein, 2005). Early substance use also predicts substance abuse in later adolescence and adulthood, and a range of negative personal and social long-term outcomes (Schulenberg et al., 2014). Substance abuse is also associated with suicidality, with increases in risk observed in both clinical and community samples of adolescents (Esposito-Smythers, 2004; Goldston, 2004).

The transition to adulthood, between the ages of 18 and 25, is a period marked by uncertainty, multiple life decisions, and a high degree of instability (Sussman & Arnett, 2014). Beyond these developmental stage characteristics, there are a number of factors that specifically increase risk for the emergence of problematic substance use. Drugs are readily accessible and involvement in risky behavior is tolerated (or encouraged or rewarded). Reinforcing events such as drug use, or drug use with friends, are experienced as especially pleasurable (Sussman & Arnett, 2014). For individuals making this transition who have other risk factors associated with substance-related disorders, additional concern may be warranted.

For pathways involving alcohol, the general trend involves a gradual increase in use throughout adolescence, a peak in early adulthood, and then a decrease (Brown, Mellman, Alfano, & Weems, 2011; Schulenberg et al., 2014). Focusing on the years of adolescence, however, provides a somewhat different perspective. Brown et al. (2011) describe the following trajectory groups: *abstainers/light drinkers* (with stable low use or nonuse); *stable moderate drinkers* (with stable moderate use and limited heavy use); *fling drinkers* (with time-limited periods of heavy use); *decreasers* (early onset, but declining use); *chronic heavy drinkers* (early onset and stable heavy drinking); and *late-onset heavy drinkers* (late onset, rapid escalation, heavy use).

The immediate, short-term, and long-term effects of drinking depend, in part, on age and developmental status (Brown et al., 2011; Masten, Faden, Zucker, & Spear, 2008). Early drinking results in a variety of negative consequences. Age at first use is the key variable. Early drinking is also associated with higher rates of binge drinking, risky sexual activity, aggression and violence, and poor adult outcomes (Stueve & O'Donnell, 2005; Wells, Horwood, & Fergusson, 2004). Early onset alcohol abuse is also associated with suicidality; hypotheses suggest links among impulsivity, disinhibition, and comorbid psychopathology, especially mood disorders (Nishimura, Goebert, Ramisetty-Mikler, & Caetano, 2005; Sher & Zalsman, 2005).

Important differences in alcohol use emerge in middle school and become more distinct in high school. Frequent and heavy drinking that continues through adolescence is accompanied by increasingly serious problems, including poor academic functioning, family and peer difficulties, and various deviant behaviors (Windle, 2003; Windle, Mun, & Windle, 2005). Frequent and heavy drinking is also linked to damage in alcohol-susceptible brain regions (Brown et al., 2011; Masten et al., 2008). Frequent drinking, like early drinking, is related to aggression; this outcome is sometimes part of a wider pattern of problematic behavior (Masten et al., 2008; Swahn & Donovan, 2005). Solitary drinking is particularly important to note, as it is unusual and predicts continued drinking problems in adulthood (Creswell, Chung, Clar, & Martin, 2014). Transitional life events (e.g., changes in education setting or employment) may provide opportunities for some adolescents to grow out of alcohol use and abuse (Dawson, Grant, Stinson, & Chou, 2006; Masten et al., 2008).

For pathways involving marijuana, three adolescent trajectories of nonescalating use have been identified: *low users*, *medium users*, and *high users*. One trajectory of escalating use has been described: *escalating users*. A mix of distinctive risk and protective factors are associated with each trajectory (Eassey, Gibson, & Krohn, 2014; Passarotti, Crane, Hedeker, & Mermelstein, 2015). Descriptions of trajectories that extend into adulthood differ somewhat. They include nonusers (27%), an adolescence-limited pathway (21%), a late-onset pathway (20%), and a chronic pathway (32%). The chronic trajectory was associated with the worst outcomes in terms of mental health outcomes, economic outcomes and overall functioning (Epstein et al., 2015).

The Gateway Hypothesis, Common Liability to Addiction Model, and Developmental Cascade Models

The **gateway hypothesis** is an inclusive stage theory of drug involvement that proposes that the use of alcohol or marijuana acts as a gateway to the use of harder drugs such as cocaine, heroin, or methamphetamines (Kandel, 2002; Kandel & Yamaguchi, 2002). Additional data suggest that nicotine may also be a gateway drug that leads to marijuana use (Kandel & Kandel, 2015).

There are alternatives to the gateway hypothesis. The **common liability to addiction model** assumes that there is a nonspecific propensity to use drugs. This propensity is correlated with both opportunities to use various drugs and the actual use of drugs given an opportunity (Vanyukov et al., 2012). Shared individual and social factors, then, contribute to the use and abuse of multiple substances. More complex explanations suggest that shared factors (such as social norms) increase an adolescent's overall risk to use any drug, and personality factors influence decisions about use of particular drugs. Pharmacological effects of particular drugs (such as marijuana) may then lead an adolescent to use other drugs. Current theoretical and empirical research lends considerable support to the common liability model (Vanyukov et al., 2012).

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The common liability to addiction model provides an explanation of the initiation of drug use and the development of substance abuse and addiction.

Developmental cascade models of substance use and abuse have also been described. In a dynamic cascade model of the initiation of substance use, various indices of problematic functioning at particular points in time predict later problematic functioning (Dodge et al., 2009; also see Figure 14:3). The indices include biological factors, parenting factors, peer factors, and environmental factors. Findings related to this model include multiple small effects of various factors, the importance of early development, continuity over time, ongoing transactions among domains of functioning, and opportunities for change at various time points in various domains (Dodge et al., 2009). Luciana (2013) describes a developmental cascade model of substance use focused on incentive motivation. In her model, adolescents who are not monitored and who engage in substance use may experience a cascade in which brain and behavior processes are "derailed, overly taxing the developing prefrontal system, and leading to allostatic changes that are detrimental . . . to future neurobehavioral organization and function" (p. 1338).

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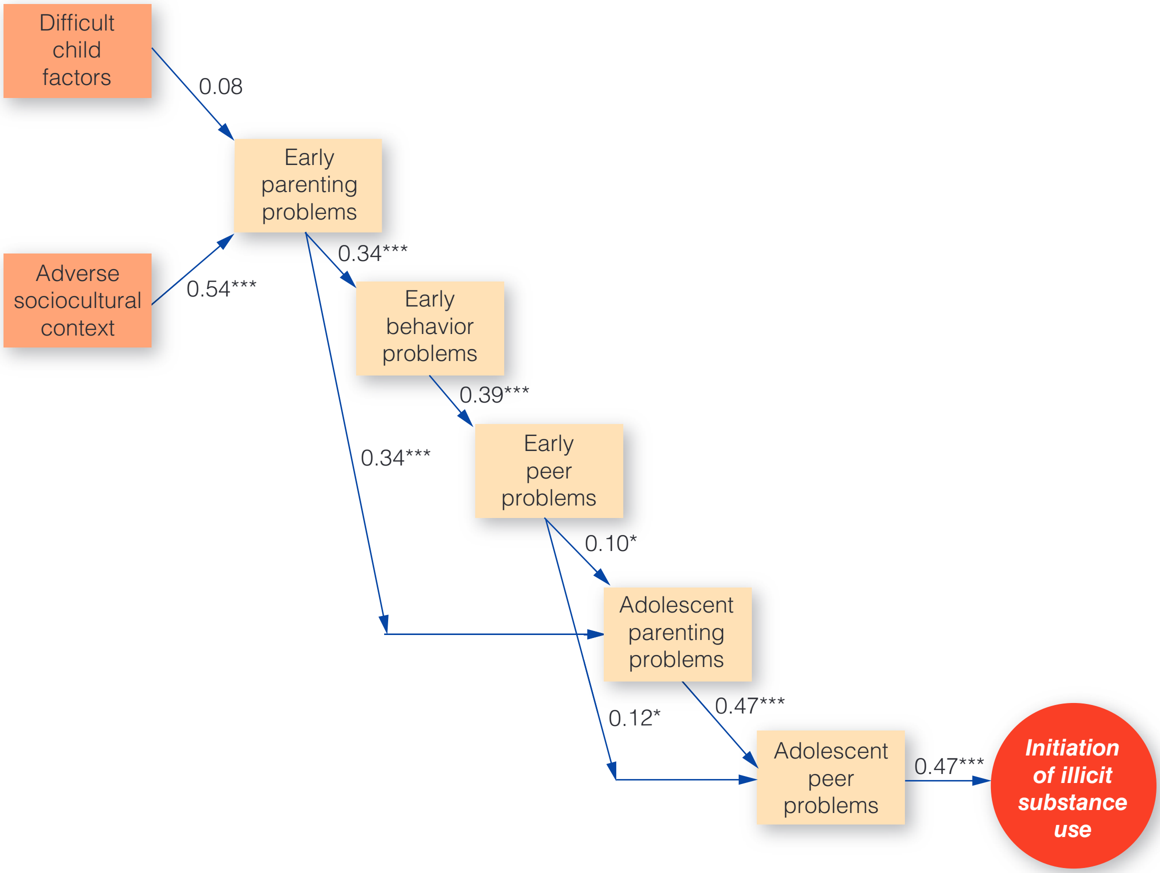

FIGURE 14:3 An empirical model of substance-use development.

Source: K. A. Dodge et al. (2009). A dynamic cascade model of the development of substance-abuse onset. Copyright © 2009 Monographs of the Society for Research in Child Development. Reproduced with permission of John Wiley & Sons Inc.

Other cascade models of substance use and abuse highlight individual and interpersonal risk factors that influence high-risk trajectories (Haller, Handley, Chassin, & Bountress, 2010; Lynne-Landsman, Bradshaw, & Ialongo, 2010), specific experiences such as maltreatment that lead to internalizing and/or externalizing disorders that increase the risk for substance abuse (Rogosch, Oshri, & Cicchetti, 2010), and the ways in which changes in school, family, and/or work roles may precipitate changes in substance use during the transition to adulthood (Staff et al., 2010).

Etiology

Models of etiology need to explain initial experimentation and drug use, drug abuse, and drug addiction, with various factors coming into play at different points along the trajectory of use. For most adolescents, combinations of risk factors (such as maturational factors, emotional and cognitive development, and family, peer, and social variables) lead to disorder; for others, a single risk may be enough to set psychopathology in motion (Cicchetti & Rogosch, 1999; Clark, Cornelius, Kirisci, & Tarter, 2005; Schulenberg et al., 2014).

Genes and Heredity

Genetic contributions to substance abuse disorders must be understood in the context of clear environmental impact. That said, twin studies, family studies, and adoption studies provide overwhelming evidence of a moderate-to-high inherited vulnerability. Genetic influence varies depending on age (with increasing influence over the course of adolescence) and appears differentially related to initiation and to continued use or dependence (Dick, 2011; Harden & Mann, 2015).

The role of genetics in alcohol use and abuse has been extensively researched. The Stockholm Adoption

Study is one example of a large-scale longitudinal investigation providing valuable data (Cloninger, Bohman, & Sigvardsson, 1981; Sigvardsson, Bohman, & Cloninger, 1996). Multiple alcohol problems are genetically influenced, including motivation to drink, alcohol sensitivity, the amount of alcohol consumed, steady drinking, and eventual dependence (Dick, 2011). Age of first drink is also influenced by genes, but environmental factors and gene-by-environment interactions are even more influential (Hines, Morley, Mackie, & Lysnkey, 2015; Richmond-Rakerd et al., 2016). The genetic and environment interplay over time is illustrated in Figure 14:4.

Physiological Factors

Animal studies illustrate many of the potential mechanisms of drug use and abuse, with different brain pathways underlying drug reinforcement, tolerance, dependence, and addiction. The adolescent brain, in and of itself, is a risk factor, with age-related changes in sensitivity to the effects of alcohol and drugs (Spear, 2013). The initial stages of drug use and drug liking are associated with the brain's reward centers, which are embedded in the mesolimbic system. Activation of the mesolimbic pathway, particularly the dopamine receptors, depends on the particular substance; the most addictive drugs have the most rapid effects (Kosten et al., 2005). Individual differences in sensitivity to these immediate effects and the ability to digest or metabolize substances (likely attributable to genetic influences) may relate to individual differences in the levels of pleasure or aversion that accompany drug experimentation (Goldman, Oroszi, & Ducci, 2005). In fact, Spear (2013) argues that adolescents are more sensitive to the rewarding properties of alcohol and less sensitive to its aversive properties; they are also generally less sensitive to intoxication.

Chronic use leads to neurobiological changes that may underlie tolerance (Brown & Tapert, 2004; Kosten et al., 2005). Further, "repeated exposure to escalating dosages of most drugs alters the brain, so that it functions more or less normally when the drugs are present and abnormally when they are not" (Kosten et al., 2005, p. 7). With tolerance, transitions to dependence may occur, with cravings, compulsive drug seeking, and urgent attempts to escape withdrawal (Kosten et al., 2005; Schulenberg et al., 2014).

Going beyond the hedonic view that emphasizes the pleasure associated with drug use (i.e., drug liking) and the need to avoid withdrawal symptoms, the **incentive-sensitization theory** is a multistage explanation of addiction (Berridge, 2007). First, various substances alter brain organization and function. Second, these altered brain systems affect behavior in situations involving motivation and reward. The dopamine system that usually signals that certain stimuli will lead to positive reinforcement becomes hypersensitized to drugs and drug stimuli; this is referred to as *incentive salience*. At this stage, drug cues are increasingly difficult to ignore, and craving may become a more important factor in continued drug use than pleasurable effects. To understand craving as an essential aspect of drug use, researchers must address both physiological and psychological factors (Berridge, 2007; Harden & Mann, 2015; Khurana et al., 2015). Of course, this theory has a direct connection to the description of the

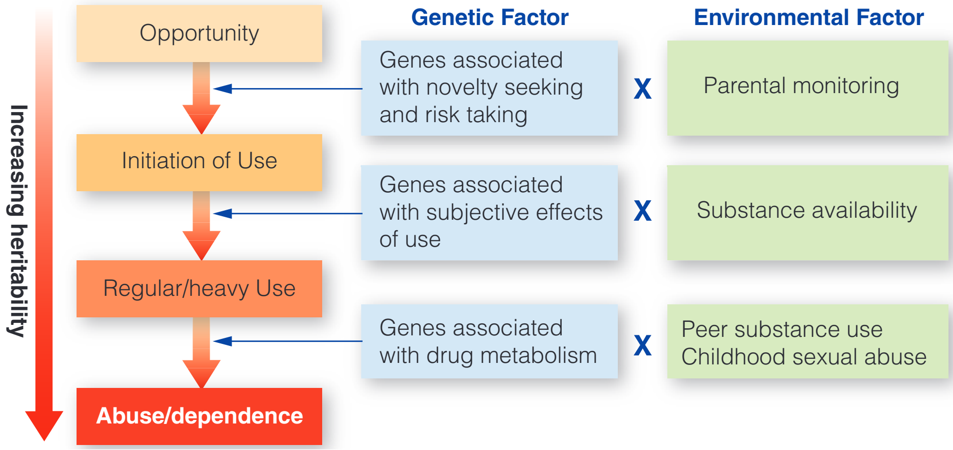

FIGURE 14:4 Genetic and environmental interplay in adolescent substance use disorders.

From Hines, Morley, Mackie, & Lynskey (2015). Genetic and environmental interplay in adolescent substance use disorders. Current Addictions Reports, 2, p. 126.

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development of the prefrontal cortex and the incentive motivation system at the start of this chapter.

Child Factors

A history of childhood psychopathology is one important influence on the development of substance abuse disorders in adolescence. Externalizing disorders, including ADHD and conduct disorder, are perhaps the most strongly linked to substance use and abuse (Howard et al., 2015; Molina & Pelham, 2014; Schulenberg et al., 2014). Depressed adolescents, especially those with additional social impairments, are also at higher risk (Cicchetti & Rogosch, 1999; Sung, Erkanli, Angold, & Costello, 2004). Adolescent boys who are depressed are more likely to smoke marijuana (Crane, Langenecker, & Mermelstein, 2015). Child maltreatment is another key risk factor (Agrawal, Neale, Jacobson, Prescott, & Kendler, 2005; Rogosch et al., 2010).

Many externalizing disorders, as well as panic attacks, are related to smoking in particular (Agrawal, Madden et al., 2005; Lambert, 2005). Higher rates of smoking have also been noted in adolescents prior to the emergence of schizophrenia (Weiser et al., 2004). These connections raise the issue of *self-medication*, and whether some adolescents are smoking or using other drugs to improve mood, increase cognitive function, and deal with difficulties or symptoms of other disorders. Data related to self-medication hypotheses are mixed (Beesdo et al., 2009; Lansford et al., 2008; Putnins, 2006).

Many of the associations between childhood disorders and adolescent substance abuse are likely mediated by individual variables such as deficits in executive function, high levels of negative emotion and emotional dysregulation, and poor self-control (Schulenberg et al., 2014). Disinhibition (or behavioral undercontrol) is a key construct underlying increased risk (Hirsh, Galinsky, & Zhong, 2011; Zucker, Heitzeg, & Nigg, 2011). Integrating physiological and cognitive factors, the **cognitive-deficits model** of addiction is based on the idea that repeat, chronic drug use results in abnormalities in the prefrontal cortex, impairing judgment, decision making, and impulse control (Kosten et al., 2005).

Motivations, expectancies, and attitudes are cognitive variables associated with drug use and other problem behaviors. Positive expectancies are moderated by parent expectations (Simons-Morton, 2004). Perceptions of risk related to binge drinking are highest in eighth graders, somewhat lower in tenth graders, and lower still in twelfth graders; these perceptions are associated with decreases in rates of disapproval across the upper grades (Johnston, O'Malley, Bachman, & Schulenberg, 2008). There appears to be a balance between adolescent perceptions of risk and benefits, on the one hand, and personal experiences of drinking, on the other hand (Hampson, Severson, Burns, Slovic, & Fisher, 2001). Adolescent beliefs related to marijuana reflect decreases in perceived risk for occasional (i.e., weekly) use (SAMHSA, 2014). As might be expected, adolescents who endorse motivations to abstain from marijuana use are less likely to use marijuana in adolescence and young adulthood (Anderson, Sitney, & White, 2015). Several studies describe personality profiles that are linked to substance abuse: one related to a tendency toward social deviance and the other related to an excitement- or pleasure-seeking path (Crawford, Pentz, Chou, Li, & Dwyer, 2003; Schulenberg et al., 2014), with similar personality profiles predicting both substance abuse and gambling problems (Slutske, Caspi, Moffitt, & Poulton, 2005).

Parent and Family Factors

Parents influence adolescent substance use and abuse in a variety of ways. The first way is through exposure. One in four children is exposed to alcohol abuse or dependence in family settings (Grant, 2000). Parental use increases adolescent use; parental nonuse moderates adolescent use, even when peer use is taken into account (Li, Pentz, & Chou, 2002). In addition, parental gambling problems predict adolescent gambling problems (Slutske & Richmond-Rakerd, 2014; Vachon, Vitaro, Wanner, & Tremblay, 2004). Marijuana use and abuse appear especially influenced by parent and family factors (Epstein et al., 2016). Siblings also have an important role to play, legitimizing, promoting, or discouraging various forms of substance use (Pomery et al., 2005; Schulenberg et al., 2014). Other types of parent and family psychopathologies likely influence all of these associations (Ohannessian et al., 2004; Yu, Stiffman, & Freedenthal, 2005).

Parenting expectations and parenting practices also influence substance use and abuse. Although parents differ in their perceptions of their ability to prevent drug use (Redmond, Spoth, Shin, & Hill, 2004), parents who convey expectations that drug use will not occur and who monitor their adolescents' activities do provide protective benefits (Schulenberg et al., 2014).

Although family structure, such as single-parent status, is frequently associated with increased substance abuse, family structure is better viewed as “a marker of the unequal distribution of factors” such as exposure to stress and connections with deviant peers that lead to substance abuse (Barrett & Turner, 2006). Authoritative parenting further reduces adolescent risk (Chassin, Presson, Rose, et al., 2005; Wang, Matthew, Bellamy, & James, 2005). Adolescents’ perceptions of parental support are crucial (Beitchman et al., 2005).

Peers and Sociocultural Factors

Whether friends drink, smoke, or use drugs influences adolescent beliefs and behaviors, although there are gender and cultural variations (Schulenberg et al., 2014). In mixed-sex friendships, for example, boys have influence over girls’ drinking, but girls do not have a similar influence over boys (Gaughan, 2006). Being a member of certain peer groups, such as sports teams or performing arts groups, increases vulnerability (Barber, Eccles, & Stone, 2001; Eccles & Barber, 1999). Relationships with deviant peers are another key risk factor (Dishion, 2014; Schulenberg et al., 2014). The transition to high school appears to be a turning point. At this time, peers who support deviance and rule breaking lead to increases in adolescent substance use (Albert, Chein, & Steinberg, 2013; Dishion, 2014). Researchers describe a pattern of reciprocal influence, from peers, to substance use, to more exclusive selection of deviant peer groups, and then to more frequent and more serious substance use and abuse (McDonough, Jose, & Stuart, 2015).

The school setting is also extremely important. School policies that involve more monitoring of students reduce substance use (Kumar, O’Malley, & Johnston, 2005; Schulenberg et al., 2014). The norms of the student and staff population, as well as the social image of smokers, are also influential factors (Evans, Powers, Hersey, & Renaud, 2006; Kumar et al., 2005). Other environmental factors that increase or decrease risk include neighborhoods and community norms, ease of access, economic factors, and advertising and the media (Jessor et al., 2003; Schulenberg et al., 2014; Warner, 2016). High-SES backgrounds are also associated with increased risk. This risk is related to easy access to money and substances coupled with peer expectations and reinforcement for using drugs (Luthar et al., 2013). Cohort effects related to *generational forgetting* of the potential harm associated with particular drugs also seem related to increases and declines in substance use (Johnston et al., 2008).

Assessment and Diagnosis

As with every other form of psychopathology, comprehensive assessment of substance abuse disorders is critical. And given physiological complications such as tolerance or withdrawal, medical evaluations are an important component of complete assessments. With respect to the substance abuse itself, patterns of use (whether episodic or continuous), availability and accessibility of drugs, perceived importance of drugs, the effects of drugs, and family histories of alcohol and drug abuse are key criteria.

The multifactorial etiology of substance abuse requires a full assessment of psychological functioning, including deficits or maladjustment related to cognition, emotion, or behavior (Tarter, 2005). Cognitive assessments include neuropsychological testing and tests of skills frequently impaired by drug use, such as abstract thinking and memory. Cognitive difficulties related to attributional style, perceptions of risk, and mistaken beliefs must also be considered. The emotionality and emotional flare-ups observed in adolescents with substance abuse disorders must also be carefully assessed. Clinicians must collect information about behavioral maladjustment in personal, family, peer, school, and employment domains. The extent to which an adolescent has access to social support from family or friends (or is connected to deviant or delinquent groups) is another important piece of data.

In addition, an adolescent’s underlying personality and other comorbid psychopathologies require review and appreciation. Even though many adolescents do not see connections between substance abuse and other problems or disorders, mental health professionals need to encourage disclosure (Medeiros et al., 2005). Another critical component of assessment involves the appraisal of the adolescent’s strengths. Given that few adolescents seek treatment for substance abuse on their own, acknowledgment of these strengths may lay the foundation for initial rapport and allow for discussions about readiness for intervention.

Intervention

Prevention

Avoidance of drugs is a developmental challenge, with theoretical and practical issues complicating prevention research, design, program delivery, and evaluation (Brown et al., 2011; Sussman & Arnett, 2014). But even with multiple viewpoints and assorted difficulties, prevention efforts aimed at reducing substance use and abuse can be successful (Masten et al., 2008; Schulenberg et al, 2014). Universal prevention programs cast a very wide net and often promote healthy lifestyles and healthy choices to adolescent populations (He, Kramer, Houser, Chomitz, & Hacker, 2004; Williams, Holmbeck, & Greenley, 2002). Many mental health and public health professionals point out that declines in drug use in recent years parallel the widespread use of prevention efforts in early and middle adolescence (SAMHSA, 2014). Even so, there is ample evidence of their ineffectiveness, as well as data that prevention programs actually *increase* interest in drug use for certain adolescents (Kaminer & Bukstein, 2005). One of the important aspects of prevention efforts, and one of the more controversial, is whether to acknowledge that most adolescents will at some time use mood-altering substances, and whether and how to include harm reduction (i.e., non-abstinence-based) approaches as well as abstinence messages (MacMaster, Holleran, & Chaffin, 2005).

One example of harm reduction for older adolescents involves emphasizing safe or sensible drinking with some adult supervision (Coleman & Cater, 2005). The "social norms" approach addresses the inclination of college students to believe that their peers drink much more than they actually do. It has been demonstrated to reduce levels of alcohol consumption and high-risk drinking in many campus communities (Dejong et al., 2006). Using public and institutional policies to change the environment is another prevention option (Pentz, Mares, Schinke, & Rohrbach, 2004; Wagenaar, Lenk, & Toomey, 2006). Restricting the availability of alcohol and enforcing limits on alcohol use are examples of these types of policies (Markowitz, Chatterji, & Kaestner, 2003; Wagenaar, Toomey, & Erickson, 2005).

Selective prevention efforts are more focused. Several effective programs converge on developmental transitions that are associated with increased risk (Furr-Holden, Ialongo, Anthony, Petras, & Kellam, 2004; Petry, 2005). For example, family-centered programs that begin in middle school can delay the initiation of substance use for both typical and at-risk adolescents (Stormshak et al., 2011). Parent training can also be effective. Collaborative, community-based efforts have also shown promise (Flewelling et al., 2005); community interventions require attention to variables such as rural versus urban settings and homogeneous versus diverse groups of adolescents (Komro et al., 2004).

Targeted prevention is even more specifically directed and is based on the idea that risk and vulnerability can be reliably measured in individuals and subgroups of adolescents (Schulenberg et al., 2014). Although there are many risk factors and individual differences in vulnerability to those factors, it is imperative to design programs that will reach those most in need. For example, embedding prevention programs in early, related services such as Head Start might involve fostering the personality characteristics that are associated with later drug avoidance (Kaminski, Stormshak, Good, & Goodman, 2002). Paying attention to children's gender, personalities, social challenges, and environmental contexts maximizes prevention outcomes (Brown et al., 2011; Masten et al., 2008). Prevention efforts frequently target at-risk youth, including American Indian and Alaskan Native adolescents (Hawkins, Cummins, & Marlatt, 2004). Cultural and ethnic differences related to exposure, norms, risk, and vulnerability must be taken into account. Other targeted groups include children who have already been diagnosed with other psychopathologies, such as externalizing disorders.

Treatment

The treatment of substance abuse disorders involves outpatient therapies, inpatient programs, day treatment placements, special school environments, and, for some, the juvenile justice system. Treatments vary widely across settings, and outcome statistics are mixed. Still, treatment is superior to no treatment, although the adolescents who succeed are often those with the least serious disorders (Kaminer & Bukstein, 2005). Reviews of outcome studies suggest that relapse is common and multiple therapeutic attempts are likely (Dasinger, Shane, & Martinovich, 2004; Kaminer & Bukstein, 2005).

There are many adolescent variables that cut across types of problems and therapies. Adolescent motivation for substance abuse treatment is a primary concern because most adolescents enter treatment due to external pressure. Incentive to change in adolescents abusing substances is modest; the strongest predictors of incentive are the negative consequences attributed to drug use (Breda & Heflinger, 2004; Sommers-Flanagan, Richardson, & Sommers-Flanagan, 2011). Adolescents who recognize that change is necessary do better in treatment than those who do not (Callaghan et al., 2005), even though some help-seeking adolescents look for help from individuals who may not be well trained or knowledgeable (or even supportive of their efforts, in the case of troubled peers) (Stiffman, Striley, Brown, Limb, & Ostmann, 2003).

Therapeutic alliances are essential to establish. Many adolescents come into therapy with various negative beliefs (Beck, Liese, & Najavits, 2005, p. 490): "My therapist is going to force me to do things I don't like." "This therapy may do more harm than good." "He probably thinks he knows everything." "She'll think I'm a failure if I use again." "I'm better off without therapy." These beliefs must be identified and refuted. Parents, too, may enter therapy with erroneous beliefs related to confidentiality and process. Because alliances with adolescents and their parents are both related to treatment success, ongoing attention to trust and rapport is needed. Paying close attention to ethnic and culturally relevant factors may enhance alliances for some adolescents (Austin & Wagner, 2010; Cunningham, Foster, & Warner, 2010). Retention and premature dropout are constant concerns; addressing these concerns early and often is important (Beck et al., 2005). Adolescents who view the therapist more positively are more likely to stay in treatment; they also display less severe substance-related impairments and have fewer deviant friends (Battjes, et al., 2004).

One of the first treatment decisions for adolescents involves level of care (e.g., outpatient versus inpatient). Specialty care is often needed for those who have previously failed in outpatient programs, those with comorbid psychopathologies, those experiencing suicidality, those in need of medical supervision for withdrawal, and those requiring isolation from family, friends, or communities (Kaminer & Bukstein, 2005; Vandrey, Budney, Kamon, & Stanger, 2005). Crisis situations require immediate placements. Sadly, racial and ethnic disparities exist in terms of access to specialty care and involvement in the justice system (Aarons, Brown, Garland, & Hough, 2004). For some adolescents, drug courts are more effective than family courts in reducing substance use and externalizing behavior (Belenko & Dembo, 2003; Henggeler et al., 2006).

Individual Approaches

Individual treatment is a common intervention paradigm. Variations include behavior therapy, cognitive-behavioral therapy, 12-step programs, and pharmacotherapy, with modifications for particular drugs (e.g., alcohol versus heroin) (Clemmey, Payne, & Fishman, 2004). Positive outcomes associated with 12-step programs are often dependent on adolescent motivation and severity of disorder. Among the most well-defined, well-studied, and well-supported treatments for substance abuse are cognitive-behavioral approaches (Beck et al., 2005; Lochman & van den Steenhoven, 2002; Waldron & Kaminer, 2004). Working with adolescent beliefs is core to the cognitive model of psychotherapy. Beliefs about self (such as negative beliefs about worth, lovability, and vulnerability), beliefs about life experiences, and substance-related beliefs are all important. The process by which change occurs involves the identification of automatic thoughts and the eventual understanding by the adolescent that these thoughts are not completely accurate or valid. Modification of these thoughts must take place at both surface and deep levels for sustained improvement (Beck et al., 2005).

Motivational interviewing is another individual therapy that shows potential. **Motivational interviewing** is a brief intervention incorporating aspects of motivational psychology, client-centered therapy, and stages-of-change theory. One unique contribution of motivational approaches is their attempt to capitalize on some of the most pertinent adolescent characteristics and control for others (Metrik, Frissell, McCarthy, D'Amico, & Brown, 2003; Neal & Carey, 2004).

Individual psychotherapies that account for neurocognitive and emotional deficits related to drug abuse are likely to produce better results (Fishbein et al., 2006). Psychotherapy for adolescents with substance abuse disorders must, in many cases, include treatment for additional psychopathologies (Esposito-Smythers, 2004, 2005; Sakai, Mikulich-Gilbertson, & Crowley, 2006). Pharmacotherapy, as well as combinations of individual, family, and milieu therapies, may be beneficial for these adolescents (Kaminer & Bukstein, 2005).

Family and Group Approaches

With the role of parents and families in the development and maintenance of substance abuse disorders, it makes sense that family approaches would be an important source of therapeutic impact (Brody, Kim, Murry, & Brown, 2004; Thompson, Pomeroy, & Gober, 2005). For some subgroups, it appears particularly important. For instance, parents have different roles in different cultural groups (Kim, Zane, & Hong, 2002). There are differences, for example, in the degree to which families display connectedness or involvement in their adolescents' lives, as well as in the amount and type of supervision. In Latino families, with high rates of substance abuse disorders and a family-oriented culture, family therapy is effective (Sale et al., 2005); for Latina girls, family connectedness is an especially salient factor leading to delayed or reduced alcohol use. Mental health professionals working with diverse families need to account for variables such as ethnic orientation, level

BOX 14:1

EMERGING SCIENCE

The Transition to Psychosis

The North American Prodrome Longitudinal Study (Cannon et al., 2008; Addington et al., 2015) is a compelling example of how a developmental psychopathology perspective can help us better understand not only major psychiatric disorders, such as schizophrenia, but the developmental course leading to such disorders. This dynamic understanding allows us to ask important questions concerning risk, prevention, and the developmental course of disorders that are central to a lifespan understanding of psychopathology.

The North American Prodrome Longitudinal Study (NAPLS) represents a national consortium of sites focused on understanding the psychosis prodrome, subsequent developmental trajectories, and specific mechanisms that lead to psychotic disorders. The term *psychosis prodrome* refers to the group of symptoms linked to the onset of psychotic disorders. These include, for example, unusual and idiosyncratic thinking, atypical social functioning characterized by suspiciousness, and communication problems. In and of themselves, these types of symptoms do not represent a psychotic process. However, while concerning in their own right, they also indicate heightened risk for the development of psychotic disorders. It is the early identification and prospective assessment of individuals at risk for prodromal syndromes, schizophrenia, and other psychotic disorders that allows for the study of the specific mechanisms that lead to major psychopathology. The initial phase of the NAPLS focused on finding those variables that might allow for more accurate prediction of later psychotic disorders. In order to do this, they first recruited adolescents at risk for major psychopathology based on a number of potential factors.

The initial study results established the viability of this research model (Cannon et al., 2008). The rate of conversion to psychosis of the initial sample of over 300 high-risk adolescents was 35% over a 2 ½-year follow-up period. In addition, of the 76 potential predictors of psychosis, five were found to have highly significant predictive value in identifying individuals likely to develop a psychotic disorder. These factors included genetic risk for psychosis (with decline in functioning), unusual thought content, suspiciousness or paranoia, impaired social functioning, and a history of drug abuse. The NAPLS researchers found that by combining certain variables, they could markedly increase the predictive power of their algorithms. For example, the combination of genetic risk (with decline in functioning) + unusual thought content + lower social functioning identified those who converted to psychotic disorders with 81% accuracy.

Whereas approximately one-third of the original NAPLS sample went on to develop a psychotic illness, two other roughly equivalent clusters were identified as well. A second cluster of the high-risk sample had their original symptoms remit and went on to show no signs of thought disorder, while a third cluster continued to show a relatively stable pattern of attenuated psychotic symptoms (Addington et al., 2015). This last finding has important implications for broadening our understanding of the domain of thought disorders as representing a spectrum of psychopathology. This spectrum seems to include some individuals who become asymptomatic over time, some who progress to a full psychotic disorder, and some who continue to present with the partial expression of thought disorder symptoms. The continued study of this

of acculturation, and ethnic mistrust in order to provide culturally competent treatments (Gil, Wagner, & Tubman, 2004; Strada, Donohue, & Lefforge, 2006).

Group approaches can also be effective, particularly those based on cognitive-behavioral principles (Waldron & Kaminer, 2004). The role of peers is again an issue. As with treatments for conduct disorder, group treatment for substance abuse is related to both improvement and deterioration (Macgowan & Wagner, 2005) because peers often provide "deviancy training," as well as support and modeling of varieties of substance abuse (Dishion, 2014). Managing the peer environment in group therapy is critical to treatment success (Dishion, 2014). School-based quitting programs are another treatment option; adolescent awareness of and access to such programs are necessary first steps (Balch et al., 2004). Students who display higher motivation to change, who have previously attempted to quit, and who experience fewer stressors are more likely to attend school programs (Turner, Mermelstein, Berbaum, & Veldhuis, 2004). Residential treatments often report the most marked improvement, but meaningful reductions in drug use must be understood in the context of the more distressed and dysfunctional adolescents who enter residential programs and who frequently relapse when discharged (Dasinger, Shane, & Martinovich, 2004).

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final group may bolster the case for including a version of attenuated psychosis syndrome in future editions of the DSM classification system (Yung et al., 2012; also see Table 14:1).

As the NAPLS consortium expands the number of individuals followed (now over 700) and continues over time, it is deepening our understanding of key pathophysiological and developmental mechanisms influencing the progression from prodromal psychotic symptoms to psychotic disorders. For example, although evidence for increased exposure to stress among the NAPLS sample is inconsistent, the prodromal group that went on to develop psychotic disorders was found to have heightened sensitivity and reactivity to the stress they did experience (Trotman et al., 2014). In addition, more recent NAPLS findings suggest that early traumatic experiences are associated with the onset of psychosis later in life (Stowkoly, 2016).

Findings from the NAPLS initiative have also shown significant neurodevelopmental differences involving both gray matter (functional) and white matter (connectivity) in high-risk individuals who develop psychotic disorders as compared to typically developing adolescents (Chung et al., 2015; Cannon, 2015; Gee et al., 2012). For example, in typically developing adolescents, gray matter changes include the progression from a high proliferation of neuronal synapses to the orderly pruning of up to 40% of these synapses as functional specialization occurs. In contrast, adolescents who go on to develop schizophrenia show a decrease in synaptic density and a disrupted process of neuronal pruning. There appears to be a similar pattern of differences in regard to white matter development. Specifically, in typically developing adolescents, white matter tracts increase (enhancing brain connectivity), while both the volume and quality of white matter tracts are compromised among adolescents who go on to develop psychotic disorders.

Research projects such as the NAPLS reflect an understanding that the clinical prodome represents a critical period for studying changes associated with the onset of psychosis. This approach minimizes the confounding influences associated with studying individuals at the time of their first psychotic episode. In addition, the prodromal approach allows for the possibility of developing predictive heuristics, including predictive biomarkers, that may lead to earlier identification of individuals at risk for psychotic disorders, as well as the development of preventive and early interventions.

TABLE 14:1 DSM-5 Conditions for Further Study

Attenuated Psychosis Syndrome: Summary of DSM-5 Diagnostic Criteria

A. At least one of the following symptoms is present in attenuated form, with relatively intact reality testing, and is of sufficient severity or frequency to warrant clinical attention:
- Delusions
- Hallucinations
- Disorganized speech.

B. Symptoms present at least once per week for the past month.

C. Symptoms begun or worsened over the past year.

Given that relapse is a fairly common occurrence, relapse prevention must be incorporated and emphasized in individual, family, and group treatments. Research has identified the variables most associated with relapse; these include comorbid psychopathology, negative emotion, withdrawal symptoms, and peer pressure (Kaminer & Bukstein, 2005; McCarthy, Tomlinson, Anderson, Marlatt, & Brown, 2005). The likelihood of drug exposure and renewed drug use must be addressed. It is essential to learn to manage cravings and urges, to deal with high-risk situations, and to make necessary lifestyle changes (Beck et al., 2005). For many adolescents leaving inpatient programs, specific and detailed aftercare plans are crucial components of ongoing success.

Psychotic Disorders in Adolescence and Young Adulthood

Adolescence, particularly late adolescence, is a critical period for the onset of **psychosis** and especially severe forms of psychopathology, such as bipolar disorders and schizophrenia. Given the voluminous literature available, we will not provide a comprehensive overview of the clinical presentation, the developmental course, etiology, and interventions for these disorders. Instead, we will focus on contemporary research and clinical investigations of the transition to psychosis that are grounded in the developmental psychopathology framework (see Box 14:1). The case of Luke provides additional perspective.

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The Case of Luke

As a 16-year-old high school student in the 11th grade, Luke was first referred to a community psychologist for a diagnostic evaluation by his therapist, who was growing concerned about Luke's increasing social isolation at school and reports of conflict with his parents. Although Luke has a history of moderate emotional and learning problems, his therapist, who has worked with him for several years to address both anxiety and mood symptoms, hoped that he would thrive in high school, where his intelligence, sociability, and varied interests would be valued and supported. Unfortunately, after a modestly successful first year, a pattern of difficulties began early in his sophomore year, leading to a gradual deterioration in academic and social functioning, as well as an increase in concern on the part of Luke's parents and teachers. Over the course of that school year, Luke was described as increasingly vigilant and suspicious. He developed an extreme sensitivity to light and noise, and this became a source of stress to him each day, leading to an increasing level of social withdrawal. Although Luke's grades in math and science dropped compared to ninth grade, he continued to do well, despite his problems, in his English and social studies courses, where his love of reading, strong verbal skills, and engaging writing style served him well.

Following the end of the school year, Luke was excited about finding a summer job at a fast food restaurant. However, after several weeks, Luke found it stressful to interact with coworkers and the public, began arguing with the manager, and frequently skipped shifts, complaining that he was too tired to work. Luke was eventually let go, and he spent the majority of the summer on his own playing video games.

As Luke began his junior year, his parents reported that "everything began to fall apart." His social and academic problems at school, as well as conflict at home, intensified. He was briefly hospitalized after endorsing significant suicidal ideation as part of the psychological evaluation. Luke's treatment team tried a variety of medications and psychosocial interventions, but none seemed to slow the acceleration of symptoms or deterioration in functioning.

As the school year progressed, Luke was described as becoming even more mistrustful. His greater sensitivity to light and noise intensified. Partly in response to these sensitivities, Luke began to develop increasingly rigid behavioral routines to minimize his exposure to light and sound. For example, he insisted on wearing sunglasses indoors and stuffing his ears with cotton—behaviors that often led to his being teased by classmates. In situations that would have previously made Luke uncomfortable, he now tended to quickly escalate to outbursts of anger and frustration. This was an especially common response to what he perceived as classmates deliberately slamming lockers and talking loudly in an effort to annoy him.

Luke's explanations for his frustration became increasingly complex and idiosyncratic and reflected extreme suspicion of the motives and intent of his teachers and parents. He sent a long, rambling letter to all the members of the school board accusing the principal of installing more intense lighting throughout the school as part of a "plot" to affect student behavior by forcing them to walk through the halls with their eyes shielded. Luke also insisted that his father was pretending not to understand his struggles as a way to mock and "torment" him.

Late in Luke's junior year, the police were called to his house when he threatened his family with a hammer, insisting that they were plotting to poison him. When questioned, Luke said that his parents were introducing toxins into the air by chemically altering food through the process of cooking it. Luke's school attendance became erratic, and he ended the year with several course incompletions. That following summer, he became reluctant to travel outside the house during daylight, for fear that radiation from the sun would instantly and irreparably damage his DNA. His personal hygiene deteriorated as well, due in part to his refusal to shower. His explanation for why he wouldn't shower was his belief that dangerous gases were released when water was converted to steam.

Throughout this shift into more frankly delusional beliefs, Luke insisted that he was being entirely reasonable and that his family was trying to make him feel like the "oddball" in an attempt to drive him from his home. Shortly after reporting this to his therapist, he became preoccupied with the belief that he had been switched at birth and that his family was perpetrating an elaborate hoax on him.

Luke's isolation and erratic behavior continued through the summer and into his senior year. Eventually, he refused to attend school or leave his home. He spent much of his time in the bathroom in order to protect himself from light, sound, toxins, and radiation. Attempts by Luke's parents to get him to leave the bathroom led to an escalation of his threats to the family, claiming that he had the ability to stop their hearts with his mind. The police were once again called to the home, this time leading to an emergency psychiatric hospitalization.

Luke was diagnosed with a psychotic disorder, possibly schizophrenia, and a medication regimen was found that helped reduce the most disturbing psychotic

> symptoms. Eventually, he made the transition from the hospital to a residential treatment program, where the combination of medication, individual, and group therapy helped him to develop more effective coping strategies. Luke rediscovered his love of reading and writing fiction and gradually reengaged in productive academic work. He continues to struggle with symptoms of confusion and agitation when feeling stressed. However, following his return home, Luke successfully completed high school in an alternative learning center and hopes to continue his education through a local two-year community college program. ■

The case of Luke illustrates the **prodrome**, the period of time before the first episode of psychosis. The prodrome phase can last for months or years, with a gradual decline in functioning across adolescence and young adulthood (Walker et al., 2013). Impaired functioning is observed in various domains, including academic, social, and occupational domains. Along with declines in functioning, there are increases in prepsychotic symptoms such as unusual ideas, suspiciousness, and atypical perceptual experiences. Investigations, like the North American Prodrome Longitudinal Study described in Box 14:1, are focused on ways to identify individuals at the highest levels of clinical risk, and to intervene in order to delay or prevent the development of severe forms of psychopathology. So far, research has carefully examined atypical brain development, gene-by-environment processes over time, epigenetic processes, the role of stress and trauma, and the activation of brain-behavioral stress systems in high-risk adolescents (Walker et al., 2013).

With respect to developmental pathways, several trajectories have been described for high-risk adolescents. These include stable-good trajectories (with relatively good functioning maintained over time), stable-intermediate trajectories (with some functional impairment and some prepsychotic symptoms displayed over time), and deteriorating trajectories (with increases in impairment and psychotic symptoms over time) (Cannon et al., 2015; Lyngberg et al., 2015).

With respect to etiology, complex, multifactorial models are emphasized (see Figure 14:5). Questions that

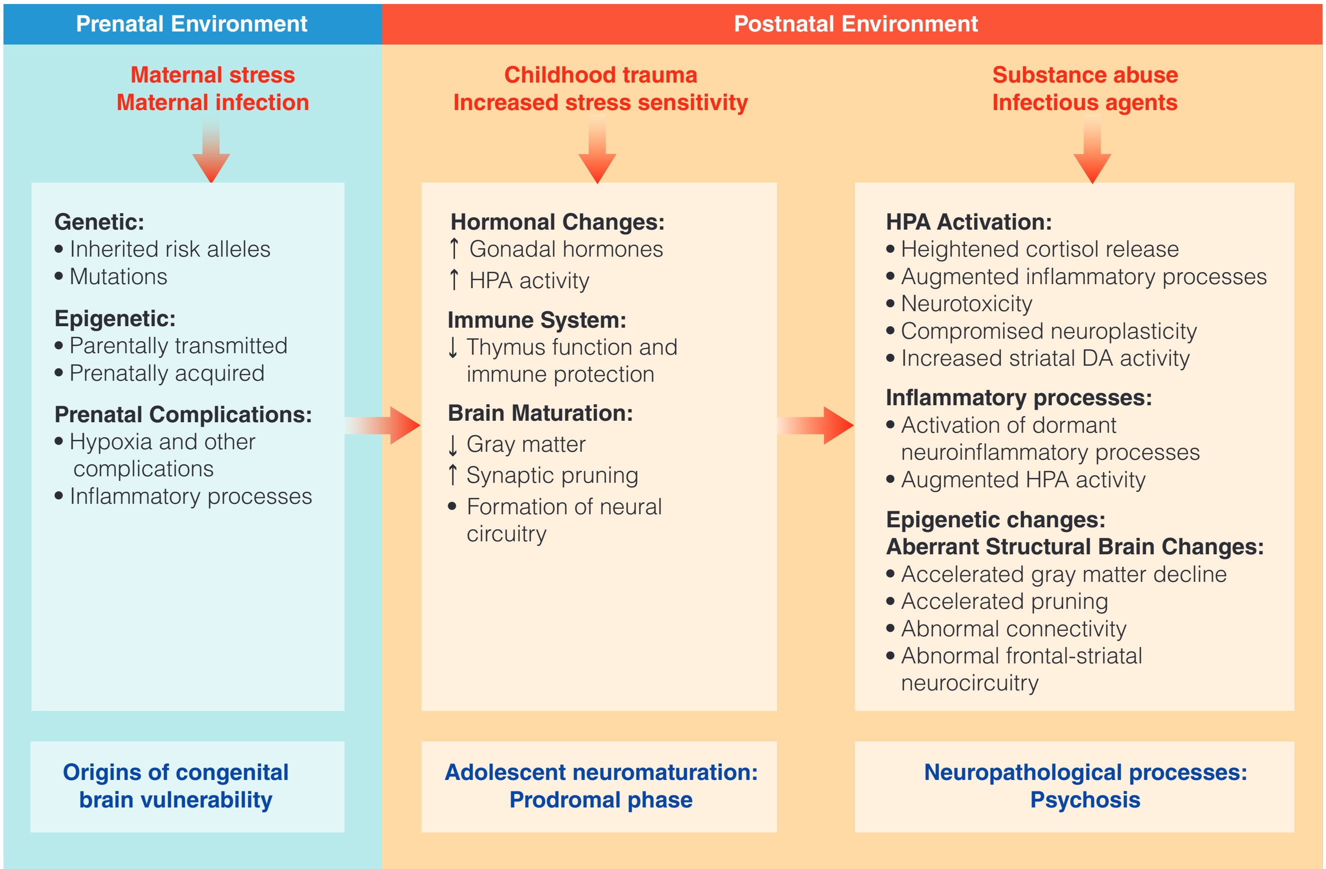
Prenatal Environment
Postnatal Environment
Maternal stress
Maternal infection
Childhood trauma
Increased stress sensitivity
Substance abuse
Infectious agents
Genetic:
• Inherited risk alleles
• Mutations
Epigenetic:
• Parentally transmitted
• Prenatally acquired
Prenatal Complications:
• Hypoxia and other complications
• Inflammatory processes
Hormonal Changes:
↑ Gonadal hormones
↑ HPA activity
Immune System:
↓ Thymus function and immune protection
Brain Maturation:
↓ Gray matter
↑ Synaptic pruning
• Formation of neural circuitry
HPA Activation:
• Heightened cortisol release
• Augmented inflammatory processes
• Neurotoxicity
• Compromised neuroplasticity
• Increased striatal DA activity
Inflammatory processes:
• Activation of dormant neuroinflammatory processes
• Augmented HPA activity
Epigenetic changes:
Aberrant Structural Brain Changes:
• Accelerated gray matter decline
• Accelerated pruning
• Abnormal connectivity
• Abnormal frontal-striatal neurocircuitry
Origins of congenital brain vulnerability
Adolescent neuromaturation: Prodromal phase
Neuropathological processes: Psychosis

FIGURE 14:5 Developmental factors in prodrome models of psychosis.

Source: E. F. Walker et al. (2013). Developmental mechanisms in the prodrome to psychosis. *Development and Psychopathology.*

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are currently being addressed include (Walker et al., 2013): What are the early genetic variants that contribute to high-risk status? How do the genetic load differences map onto observed cognitive vulnerabilities or impairments or onto increased sensitivity to stressful experiences? Atypical brain structures and development have been documented, including reduced volume in multiple brain regions, atypical connectivity, and neurotransmitter dysfunction. A number of researchers have hypothesized that pubertal hormones may influence atypical brain development (Trotman et al., 2014; Walker et al., 2013). Other researchers have focused on atypical activation of the HPA axis by both external stressors and internal neurophysiological processes. Still others have investigated whether immune system factors increase risk in vulnerable individuals.

The experience of stress and trauma may influence whether high-risk individuals transition from the prodrome phase to the development of a psychotic disorder. There is some evidence that high-risk adolescents who convert to psychosis are more likely to have histories of maltreatment; these histories are often coupled with greater sensitivity to stress or trauma (Walker et al., 2013). Social maladjustment appears to be more predictive of conversion to schizophrenia (compared to other psychotic disorders) than academic maladjustment (Tarbox et al., 2014). Marijuana use is also associated with conversion to psychosis for those in the ultra-high-risk group (Walker et al., 2013).

Of course, the hoped-for outcome is that interventions can be developed and provided that prevent or delay severe psychopathology. Psychotropic medications are frequently prescribed for adolescents who are struggling, but prognoses are better when these medications are combined with psychotherapy, education, and supportive treatments (Woods et al., 2013). Innovative interventions combine cognitive psychotherapy for adolescents with supportive psychotherapy for groups and families (Landa et al., 2016).

An example of a more comprehensive intervention effort is the National Institute of Mental Health's large-scale research initiative focused on developing and evaluating effective initiatives to treat individuals who have experienced their first episode of psychosis. The Recovery After an Initial Schizophrenia Episode (RAISE) project has demonstrated the efficacy of coordinated specialty care. Depending on the specific needs of individuals going through their first episode of psychosis, coordinated specialty care integrates psychotherapy and medication management, as well as family education and support, case management, and work or education support (Azrin, Goldstein, & Heinssen, 2016).

Personality Disorders in Adolescence and Young Adulthood

Personality disorders have a long and complicated history in clinical psychology as well as in various editions of the DSM, including DSM-5. For our purposes, however, we want to consider how best to think about personality and personality disorders in children and adolescents so that patterns of distress and dysfunction are identified early and child and adolescent well-being is enhanced in current and future circumstances.

There are a number of ways to think about typical personality development in children and adolescents, and several approaches were presented in the section on temperament in Chapter 5. One influential approach described temperament characteristics such as surgency, negative affectivity, and effortful control as early contributors to basic personality characteristics (Shiner, 2015). Over time, temperament and personality traits become increasingly differentiated and organized, and patterns of emotion, cognition, and behavior become associated with a particular child or adolescent.

Dimensional models describe two core components of personality: one concerned with the self, including identity, esteem, and regulation; and the other concerned with relationships, including capacities for connection, empathy, and intimacy (Shiner & Tackett, 2014). In these dimensional models, personality disorders are descriptions of ways in which children and adolescents display atypical experiences of self and/or relationships that are associated with significant distress or dysfunction. A recent factor-analytic model of adolescent personality disorder yielded three pattern clusters: an internalizing cluster, an externalizing cluster, and a borderline-dysregulated cluster (Westen, DeFife, Malone, & DiLallo, 2014).

Categorical models emphasize pathological personality traits and impaired personality functioning. Among the current DSM-5 categorical syndromes are antisocial personality disorder, avoidant personality disorder, borderline personality disorder, obsessive-compulsive personality disorder, narcissistic personality disorder, and schizotypal personality disorder. Although many believe that their age precludes youth from being diagnosed with a personality disorder, children and adolescents can be diagnosed if they meet the set of criteria for a particular personality disorder. Caution is necessary, however, as the diagnosis of a personality disorder is often accompanied by beliefs about a chronic course, poor response to treatment, and negative stigma (Shiner & Tackett, 2014).

Rates of personality disorders are actually somewhat higher in youth than in adults, particularly in early and middle adolescence. Personality disorders are diagnosed much more frequently in youth when another form of disorder is also present (Shiner & Tackett, 2014). Overall, diagnoses of personality disorders in youth are less stable in adolescents than adults, but there is considerable variability in diagnosis stability across specific disorders. For example, diagnoses of antisocial personality disorder are much more stable than diagnoses of narcissistic personality disorder. Personality disorders are associated with a variety of short- and long-term problematic outcomes, including lower levels of education, problems in relationships, less success in work, and worse overall health and well-being (Shiner & Tackett, 2014).

Much of the research and clinical attention focused on personality disorders (in children, adolescents, and adults) involve antisocial personality disorder and borderline personality disorder. Developmental pathways from oppositional defiant disorder to conduct disorder to antisocial personality disorder were described in Chapter 9, with particular emphasis on children and adolescents who displayed callous-unemotional characteristics. Borderline personality disorder is a disorder characterized by identity disturbance, affective instability, relationship difficulties, and impulsivity; the disorder can be reliably diagnosed in adolescence (Klein, Bufferd, Dyson, & Danzig, 2014; Shiner & Tackett, 2014). Developmental pathways to borderline personality disorder have been proposed that include early forms of emotion dysregulation and impulsivity, disrupted attachment, and the experience of trauma or maltreatment (Klein et al., 2014).

Personality disorders, regardless of how exactly they are defined, represent maladaptive patterns of experiencing one's self and one's relationships. And while it may make us uncomfortable to think about an enduring pattern of psychopathology in the context of adolescent development, we must do so if we are to achieve an understanding of these disorders and potential interventions. Ongoing research and clinical attention is necessary so that adolescents and those who care about them can look to the future with realistic expectations for health and well-being.

Closing Comments

From a child clinical perspective, adolescence is often seen as a late stage in the larger developmental arc from infancy to adulthood. From an adult clinical perspective, it is generally seen as the starting point of adult development. Both these perspectives tend to underappreciate the full and distinctive arc of adolescent development itself. In terms of physiological, psychological, and social development, adolescence is a time of rapid change and transformation with important implications throughout the lifespan. For example, adolescents at risk for major psychopathology may accelerate into significant and disabling symptoms. For those at risk for maladaptive personality outcomes, adolescence represents a period of consolidating symptom patterns, especially those most relevant to interpersonal functioning.

Consequently, our effort to understand the distinctive developmental course that takes us from the end of childhood into adulthood is not simply a matter of filling in the gaps of a continuous developmental trajectory. By studying the distinctive emotional, cognitive, and behavioral changes that define this critical period of development, we equip ourselves to ameliorate suffering that might otherwise cause pain and distress through adulthood. We must use our ever-expanding knowledge of adolescent development to reduce the risk of substance-related disorders, identify those at risk for transition to psychosis and seek to eliminate or modify the expression of disordered thinking, and help those at greatest risk for establishing maladaptive personality patterns before the process of identity formation is complete. The final chapter of this book reflects the fact that a developmental psychopathology perspective does not end with adolescence. Rather, the same developmental psychopathology perspective that has guided our discussion of adaptation and maladaptation thus far continues to guide our research, diagnostic formulation, and clinical intervention throughout the lifespan.

Key Terms

Incentive motivation (p. 255)
Tolerance (p. 257)
Physical dependence (p. 257)
Withdrawal symptoms (p. 257)
Psychological dependence (p. 257)

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Addiction (p. 257)
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Prodrome (p. 271)
Personality disorders (p. 272)

Chapter Summary

- Adolescent brain development is characterized by continuing growth, increased risk taking, and evolving self-regulation.
- Substance use and abuse in adolescence carries particular risk for the still-developing adolescent brain.
- Substance abuse is defined as excessive use of or dependence on an addictive substance. Addiction is defined as a chronic disorder characterized by compulsive drug seeking and abuse.
- Alcohol use and abuse by adolescents is of particular concern because of its relatively high incidence and its specific detrimental effects on adolescent brain development.
- Other substances abused by adolescents include marijuana, inhalants, cocaine, methamphetamine, hallucinogens, and prescription drugs.
- For most classes of drugs, developmental trajectories involve a progression from exposure, to experimentation, to regular use, and, potentially, abuse and dependence.
- In general, early substance abuse predicts later use and a range of negative physical and psychological outcomes.
- The gateway hypothesis is a stage theory of drug involvement that proposes that the use of drugs such as alcohol or marijuana act as a gateway to the use of harder drugs such as cocaine, heroin, or methamphetamines. The common liability to addiction model assumes there is a nonspecific propensity to use drugs. Developmental cascade models emphasize that early maladjustment in a particular domain leads to later maladjustment in multiple domains.
- Genetic studies indicate that a strong heritable vulnerability exists for substance abuse problems.
- Conduct problems and depression occurring in childhood are both significant risk factors for the development of substance abuse during adolescence.
- Parental expectations and practices are a powerful influence on whether adolescents abuse substances during adolescence.
- Peer attitudes supporting substance use, especially as teens enter high school, lead to an increase in substance abuse.
- Assessment of, and treatment for, comorbid psychopathologies is particularly important when treating substance abuse in adolescence.
- Relapse prevention is an important aspect of an effective substance abuse treatment program.
- In the study of major psychopathology, an emerging focus has been on the early detection of those at risk for psychosis, the mechanisms responsible for the onset of psychotic symptoms, and the implications of these findings for early intervention.
- The consolidation of identity and personality characteristics is key developmental tasks of adolescence making the study of personality disorders important to the field of developmental psychopathology.

Glossary

A

Acute stress disorder A disorder involving the development of multiple psychologically based symptoms that last up to one month following exposure to a traumatic event.

Adaptive behavior A reflection of an individual's ability to manage daily living tasks, including self-care and household tasks.

Addiction A disorder characterized by compulsive drug seeking and abuse, accompanied by neurophysiological changes.

Adequate adaptation With respect to children's functioning, adequate adaptation refers to functioning that is okay, acceptable, or "good enough."

Adolescence-limited trajectory From Moffitt's model of conduct disorder (CD), related to adolescent-onset CD. The adolescence-limited form of CD is somewhat less problematic over time than the child-onset form, although there is still evidence of significant impairment in daily functioning and higher risk for poor outcomes.

Adolescent-onset subtype of conduct disorder (CD) With onset in adolescence, the individual's problem behavior emerges more abruptly than with childhood onset, and is more often time limited. Adolescent-onset CD is three times as frequent as child-onset CD.

Affective social competence The coordination of the capacities to experience emotion, send emotional messages to others, and read others' emotional signals.

Aggression Behaviors that are carried out with an immediate goal of causing harm to another.

Agoraphobia A type of anxiety disorder characterized by the experience of intense anxiety in places where individuals feel insecure, trapped, or not in control, most often associated with avoidance of such places.

Allostasis The process of actively maintaining physiological and psychological stability in response to environmental demands.

Allostatic load The cumulative physiological and psychological wear and tear caused by ongoing, and sometimes maladaptive, allostatic processes.

Anorexia nervosa A type of eating disorder characterized by a refusal to maintain body weight, intense fear of gaining weight or becoming fat, disturbance in the way in which one's body weight or shape is experienced, and denial of the seriousness of the current low body weight.

Anxiety disorders Internalizing disorders in which anxiety has gone from adaptive to pathological in terms of its intensity, duration, and pervasiveness; characterized by exaggerated and unrealistic fears and worries, overcontrol, inhibition, withdrawal, avoidance, and somatic symptoms.

Anxiety sensitivity The degree to which an individual focuses on signals of anxiety; involving hypervigilance and attention to bodily sensations, a tendency to focus on weak or infrequent sensations, and a disposition to react to somatic sensations with distorted cognitions.

Applied behavior analysis One of the most widely applied intervention strategies for autism spectrum disorder; an intensive behavioral approach, with near-constant control and direction of the child and his/her environment.

Assessment The systematic collection of relevant information in order to both differentiate everyday or transient difficulties from clinically significant psychopathology and classify a child's particular disorders.

Attention deficit/hyperactivity disorder (ADHD) A disorder characterized by a combination of impulsivity, hyperactivity, and inattentiveness.

Authority conflict pathway One of three potential developmental pathways for oppositional defiant disorder and conduct disorder, with stubborn and negativistic behaviors leading to more serious disobedience and hostility.

Autism spectrum disorder (ASD) A broadly conceptualized category of disorder reflecting compromised development in social functioning and communication, as well as restricted patterns of activities or interests.

Avoidant (anxious/avoidant) attachment A form of insecure attachment that usually reflects ineffective or inappropriate caregiving.

Avoidant/restrictive food intake disorder An eating disturbance involving the lack of interest in, or avoidance of, food.

B

Barriers to care Factors that impede access to mental health services, including structural barriers such as lack of provider availability, inconveniently located services, transportation difficulties, inability to pay, inadequate insurance coverage, or both; individual barriers such as denial of problems or lack of trust in the system; and sociocultural barriers such as the stigma of psychopathology or mental illness.

Behavior contingency management A school-based intervention of ADHD, utilizing behavioral techniques, designed to target multiple difficulties, including academic, behavioral, and social functioning.

Behavior genetics The study of the joint effects of genes and environments.

Behavioral models Psychological models that emphasize the individual's observable behavior within a specific environment.

Behavioral parent training A psychosocial intervention for attention deficit/hyperactivity disorder (ADHD) that focuses on parent-managed reinforcement of child behavior, especially with regard to core ADHD symptoms.

Behavioral phenotypes The outwardly observable behaviors (such as physical characteristics, cognitive and linguistic profiles, perceptual skills and deficits, socioemotional patterns, and overall outcomes) associated with an underlying genetic condition. Hypotheses about the links between genotypes and phenotypes must be investigated carefully.

Binge drinking Heavy consumption of alcohol in a relatively short period of time, with the primary intention of becoming intoxicated.

Binge eating disorder A disorder characterized by repeated episodes of binge eating, a sense of lack of control, and significant distress.

Bipolar disorder A mood disorder characterized by alternating periods of depression and mania, or hypomania.

Birth cohort Individuals born in a particular historical period who share key experiences and events.

Body dissatisfaction The degree to which a person is concerned or displeased with his or her physical appearance.

Body image A person's perception of his or her own physical appearance.

Body satisfaction The degree to which a person is accepting of, or pleased with, his or her physical appearance.

Bulimia nervosa A type of eating disorder characterized by recurrent episodes of binge eating, a sense of lack of control over eating during the episode, and recurrent inappropriate compensatory behavior in order to prevent weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, enemas, or other medications; fasting; or excessive exercise. Self-evaluation is unduly influenced by body shape and weight.

Bullying The intentional infliction of physical or emotional harm through physical aggression, harassment, intimidation, teasing, or psychological coercion.

C

Callous–unemotional characteristics A set of personality traits characterized by a lack of empathy, concern, guilt, or remorse.

Categorical classification A clinical classification approach based on the identification of cooccurring symptoms reflecting distinct disorders.

Categorical models of psychopathology Models that emphasize discrete and qualitative differences in individual patterns of emotion, cognition, and behavior.

Child maltreatment *Not* a diagnosis that is assigned to a child, but a broad category including physical abuse, sexual abuse, psychological abuse, and neglect.

Child-onset subtype of conduct disorder (CD) With childhood onset, the individual is usually diagnosed early and has a long history of negative personal and interpersonal behavior; this behavior deteriorates over time. With onset in adolescence, the individual's problem behavior emerges more abruptly and is more often time limited.

Chronic hassles Everyday, ongoing problems, such as struggles with homework or being teased at school, that are associated with depression and other disorders.

Classical conditioning A form of associative learning in which certain stimuli become paired with other stimuli resulting in the reliable elicitation of a response.

Classification A system for describing the important categories, groups, or dimensions of disorders.

Coercion model A model of oppositional defiant disorder and conduct disorder that focuses on the assumption that parents and children struggle for control over a number of everyday tasks and activities, and that maladaptive parenting leads to children's externalizing behavior. This model specifically examines a conditioning sequence in which children are inadvertently reinforced for their problematic behaviors.

Cognitive-behavioral therapy (CBT) A psychotherapy approach that attempts to remedy dysfunctional emotions, cognitions, and behaviors through goal-oriented, systematic, empirically based treatment techniques. CBT is based on the principles and empirical findings of learning theories and cognitive psychology.

Cognitive behavioral therapy-enhanced (CBT-E) A therapeutic approach to eating disorders focusing on identifying the cognitions and behaviors that maintain the eating disorder and working with individuals to objectively consider their disorder and develop an individualized treatment plan.

Cognitive development The developmental course of internal mental processes such as perception, attention, memory, and concept formation.

Cognitive model A psychological model that focuses on the components and processes of the mind and mental development.

Cognitive-deficits model A model of addiction that integrates physiological and cognitive factors, this model is based on the idea that repeat, chronic drug use results in abnormalities in the prefrontal cortex, impairing judgment, decision making, and impulse control.

Cognitive-vulnerability stress model of depression A model that proposes that an individual's negative attributional style, coupled with negative life events, leads to depression.

Coherence From a developmental perspective, reflects the logical and meaningful links between early developmental variables and later outcomes.

Common liability to addiction model An alternative to the gateway hypothesis of drug use, it assumes that there is a nonspecific propensity to use drugs.

Comorbidity The cooccurrence of two or more disorders in one individual.

Competence From a developmental perspective, reflects effective functioning related to relevant age-related tasks and issues; evaluations of competence are embedded in the environment within which development occurs.

Compulsions Persistent and intense impulses to perform a specific behavior.

Conduct disorder (CD) A disorder characterized by a more severe pattern of negativistic, hostile, and defiant behavior that involves the violation of social norms and rules, as well as the rights of others.

Connectome The diagram of the brain's neural connections.

Conscience The internal guide to prosocial behavior, rooted in self-regulation, including both moral emotions and moral behavior.

Conversion disorder (functional neurological symptom disorder) A type of anxiety disorder characterized by unexplained deficits in voluntary motor or sensory function that cannot be adequately accounted for by known pathophysiological mechanisms; psychological factors are clearly associated with the emergence of symptoms.

Coping Cognitive, emotional, and behavioral regulatory responses to manage stress.

Covert aggression Also called *indirect aggression*, it may include the externalizing behaviors observed in conduct disorder, such as property damage or theft.

Covert pathway One of three potential developmental pathways for oppositional defiant disorder and conduct disorder, with minor misbehaviors leading to more serious delinquent acts that tend to be concealed or secretive.

Cross-sectional research Research that collects data at a single point in time, with comparisons made among groups of participants (e.g., four-year-olds versus eight-year-olds versus 12-year-olds).

Cross-time reliability The measure of whether a child is similarly diagnosed by the same clinician at two different points in time.

D

Developmental cascades The cumulative consequences of interactions and transactions that spread across domains and over time.

Developmental cascade models For various forms of psychopathology, the multiple pathways that reflect the consequences of interactions and transactions that spread across domains and over time.

Developmental epidemiology Frequencies and patterns of distributions of disorders in infants, children, and adolescents.

Developmental pathways Trajectories that reflect children's adjustment, maladjustment, or both in the context of growth and change over a lifetime.

Developmental psychopathology Intense, frequent, and persistent maladaptive patterns of emotion, cognition, and behavior considered within the context of normal development, resulting in the current and potential impairment of infants, children, and adolescents.

Developmental trauma disorder A disorder involving both exposure and adaptation to chronic trauma, with exposure often occurring in the context of a child's caregiving environment.

Diagnosis The method of assigning children to specific classification categories.

Diagnostic and Statistical Manual (DSM) Published by the American Psychiatric Association, the DSM, now in its fifth edition, provides a listing of forms of mental illness, along with diagnostic criteria.

Diagnostic efficiency The degree to which clinicians maximize diagnostic hits and minimize diagnostic misses.

Diathesis-stress model A model that emphasizes the combination of underlying predispositions (risk factors related to, for example, structural abnormalities or early occurring trauma) and additional factors (such as further physiological or environmental events) that lead to the development of psychopathology.

Differential diagnosis Decisions about mutually exclusive categories of disorder.

Differential sensitivity The hypothesis that some individuals are more susceptible than others to both negative (risk-promoting) and positive (development-enhancing) environmental conditions.

Dimensional classification A clinical classification system based on statistical techniques that identifies individuals along dimensions of adaptive and maladaptive functioning.

Dimensional models of psychopathology Models that emphasize the ways in which typical feelings, thoughts, and behaviors gradually become more serious problems, which then may intensify and become clinically diagnosable disorders.

Disinhibited social engagement disorder (DSED) An attachment disorder characterized by an unusual lack of reticence with unfamiliar others or wariness in unfamiliar settings. Children with DSED also exhibit socially superficial behavior and attention seeking and may initiate inappropriate physical contact (e.g., hugging, climbing into laps) with strangers.

Disorganized attachment Signals a pattern of behavior and emotion reflecting difficulties establishing or maintaining a sense of security or safety in the presence of a caregiver; this pattern is associated with a history of care in which the caregiver is perceived as frightening, frightened, or malicious.

Disruptive mood dysregulation disorder A childhood mood disorder involving severe, recurrent temper tantrums that are atypical with respect to intensity and frequency. In between tantrums, the mood of the child is persistently and pervasively irritable or angry.

Down syndrome A developmental disorder that is caused by an extra chromosome 21 (i.e., trisomy 21) and is among the most widely known genetically influenced forms of intellectual developmental disorder. Accompanying physical characteristics including distinctive facial features, heart problems, and poor muscle tone. Intellectual challenges almost always involve language difficulties; socioemotional functioning is often characterized by positive affect and extraversion.

E

Eating disorders Psychopathologies characterized by severe disturbances in eating behaviors, disturbed perceptions of body size and shape, fear of being fat, and compensatory behaviors to lose weight or prevent weight gain.

Ecological model A model that emphasizes the immediate environments, or "behavior settings," in which children grow and make sense of their lives, including their homes, classrooms, neighborhoods, and communities.

Effortful control Attempts by infants to regulate their own stimulation and response; an individual characteristic described in current continuous, or dimensional, models of temperament.

Emotional (or psychological) abuse A type of child maltreatment involving ongoing and extreme disregard or thwarting of basic emotional needs.

Emotion regulation Emotional control, involving the modulation, toleration, and endurance of emotions.

Epigenetics The effect of experience and environment on the regulation of gene expression. The resultant changes in gene expression can be transmitted across generations.

Equifinality Refers to developmental pathways in which differing beginnings and circumstances lead to similar outcomes.

Executive function A set of processes that include working memory, internalization of speech, and self-regulation of emotion, which contribute to children's increasing control over their thoughts, feelings, and behaviors, as well as their interactions with others and their environments.

Exposure A main component of cognitive behavioral therapy for anxiety disorders. Exposure to the stimuli and situations that are associated with anxiety is systematic and controlled, with in vivo (real life) practice preferred.

External validity In the context of classification, external validity reflects the degree to which a diagnosis provides useful information about the implications (i.e., likely outcomes, effective treatments) of a disorder.

Externalizing dimension In the empirical, dimensional classification system, this dimension involves problematic patterns that are directed outward toward others (e.g., disruptive or aggressive behavior).

F

Family model A model that emphasizes that the best way to understand the personality and psychopathology of a particular child is to understand the dynamics of a particular family.

Fears Anxieties elicited in the presence of a specific stimulus.

Final common pathway There are multiple etiological factors leading to disorder, with the disorder as the result, or final common pathway, of combinations of different types of predisposing conditions and events.

Fragile X syndrome A developmental disorder caused by a mutation on the *FMR1* gene, fragile X syndrome is the most common type of inherited MR in boys, affecting 1 in 4,000 boys and 1 in 8,000 girls. Cognitive and language difficulties, as well as behavioral problems, are important features of the fragile X profile.

G

Gateway hypothesis A stage theory of drug involvement that proposes that the use of alcohol or marijuana acts as a gateway to the use of "harder" drugs, such as cocaine, heroin, or methamphetamines.

Gene-by-environment effects Correlations between genes and environments that involve differential exposure to environments or experiences. There are three types of gene-by-environment effects: passive correlations, active correlations, and evocative correlations.

Gene-by-environment interactions The interactive effect between genetic and environmental factors, including the influence of genes on vulnerability to risk factors.

Generalized anxiety disorder A type of anxiety disorder characterized by excessive and unrealistic worries and fears about a variety of stimuli and situations.

Genotype The genetic make-up of a cell, an organism, or an individual.

H

Heritability The proportion of phenotypic differences among individuals that can be attributed to genetic differences in a particular population.

Heterogeneity Involves the ways in which children with the same disorder or diagnosis display idiosyncratic sets of difficulties or symptoms.

Heterotypic continuity The underlying similarity of symptoms, relative to developmentally salient issues and tasks, over time, despite changes in specific diagnoses.

Homotypic continuity The stability of specific diagnoses and symptom patterns over time; for example, anxious and internalizing symptoms present during preschool, childhood, and adolescence for the same individual.

Humanistic models Psychological models that emphasize personally meaningful experiences, innate motivations for healthy growth, and the child's purposeful creation of a self.

Hypomania A mood disorder symptom characterized by problematic emotions, thoughts, and behaviors similar to mania, although there are no psychotic symptoms and the degree of impairment is less severe.

I

Individuals with Disabilities Education Act (IDEA) A federal law that defines and governs the provision of special education services.

Impaired social cognition Deficits and delays in the processing of social and emotional information and events.

Incentive motivation Observed when individuals seek out experiences in pursuit of reward or positive reinforcement.

Incentive-sensitization theory A two-stage explanation of addiction: (1) various substances alter brain organization and function, and (2) these altered brain systems affect behavior in situations involving motivation and reward.

Incidence New cases of a type (or types) of disorder in a given time period.

Indicated preventive measures A type of preventive measure provided for groups with specific risk factors that include more extensive interventions (e.g., packages of services for families with premature infants).

Individualized education plan (IEP) An educational plan designed for students with learning disabilities to improve specific academic skills and cognitive deficits.

Instrumental aggression Aggression that is premeditated or planful. In most cases, instrumental aggression is a means to a particular end.

Intellectual development The general emergence of intellectual functioning, including specific patterns of strengths and weaknesses in cognitive functioning, resulting in individual differences.

Intellectual developmental disorder A developmental disorder reflecting significant deficits in intellectual functioning and adaptive functioning.

Intellectual functioning A reflection of an individual's cognitive ability, including everyday and academic problem-solving abilities.

Internal validity In the context of classification, reflects the degree to which children with the same diagnosis have similar developmental histories and current symptom pictures.

Interpersonal–psychological theory of suicidality A theory of suicidality that postulates two general categories of risk: dysregulated impulse control and intense psychological pain.

Interpersonal therapies A relationship-focused therapeutic approach that focuses on salient age-related personal, social, and developmental issues in the context of topics such as loss, grief, and relationship difficulties.

Interrater reliability The measure of whether two or more clinicians, gathering information about one child's developmental history and current difficulties, come to the same decision about the type of disorder.

Interviews Either structured evaluations or unstructured conversations about adjustment and maladjustment, allowing parents and children to explain their concerns and, more broadly, to tell their stories; they also provide opportunities to start to build the helping relationship, an especially important consideration when a clinician knows that he or she will be working closely with children and various family members.

J

Joint attention Communicative intentions such as eye contact, pointing, and shared attention, all of which smooth out the processes of social interaction and make it easier and more rewarding to participate in the social world.

K

Kindling model A hypothesis that explains why later episodes of depression often occur in the context of less severe stress: initial stress leads to vulnerability in the hypothalamic-pituitary-adrenal axis; and, over time, the increasingly sensitive neurological response system requires lower thresholds of stimulation to trigger a new episode.

L

Life-course persistent trajectory From Moffitt's model of conduct disorder (CD) related to childhood-onset CD. Those with this trajectory are more likely to have a history of oppositional deficit disorder and a family history of antisocial behavior, are more likely to display aggression, and have worse outcomes.

Longitudinal research The ongoing collection of data from the same group of participants, or the study of individuals over time.

M

Major depressive disorder A mood disorder in children, adolescents, and adults characterized by sadness and a loss of pleasure, with multiple cognitive, behavioral, and somatic symptoms, and impaired functioning.

Maltreatment *Not* a diagnosis that is assigned to a child, but a broad category including physical abuse, sexual abuse, psychological abuse, and neglect.

Mania Distinct periods characterized by unusual and persistent mood elevation, high activity levels, decreased need for sleep, increased irritability, extremely impulsive behaviors, and sometimes psychotic thinking.

Maudsley model of family therapy A therapeutic approach to eating disorders, generally used with adolescents, in which parents have a central role in treatment. Family structure and adolescent issues related to eating and weight gain are the focus of different phases of treatment.

Modeling A classic treatment for fears, based on the principles of observational learning, modeling involves watching, practicing, and imitating adaptive behavior.

Molecular genetics Studies of the effects of specific genes at the DNA level.

Motivational interviewing A brief intervention for substance abuse incorporating aspects of motivational psychology, client-centered therapy, and stages-of-change theory.

Multifinality Refers to developmental pathways in which similar beginnings and circumstances lead to different outcomes.

N

Negative life events Major stressful events, such as a parent losing a job or a serious illness in the family, associated with depression and other disorders.

Neglect A type of child maltreatment involving a failure to provide for the physical, emotional, and/or educational needs of a child.

Neoconstructivist approach An emphasis on evolutionary contexts, experience–expectant learning, and both qualitative and quantitative change across development.

Neural plasticity The ability of the brain to flexibly respond to physiological and environmental challenges and insults.

Nonshared environment The aspects of family life and function that are specific and distinct for each child.

Nonsuicidal self-injury/self-harm Deliberate infliction of pain or injury to oneself, without suicidal intent.

O

Observational learning A form of learning that occurs by watching, remembering, and/or imitating others.

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Observation A source of valuable information involving careful watching by a clinician. Clinicians usually observe children in clinical settings such as offices, but may also observe children in naturalistic settings such as the home or school.

Obsession A persistent and intense intrusion of unwanted thoughts or images.

Obsessive-compulsive disorder A type of anxiety disorder characterized by intrusive thoughts that lead to anxiety and ritual behaviors that are intended to reduce anxiety.

Operant conditioning A form of learning in which consequences (negative or positive) lead to changes (decreases or increases) in behavior.

Oppositional defiant disorder (ODD) A disorder characterized by a sustained pattern of negativistic, hostile, and defiant behavior.

Outcome research Studies of whether, at the end of treatment, children and adolescents have improved relative to their pretreatment status compared to others who have not received treatment.

Overt aggression Also called *aggression*, involves harmful physical behaviors.

Overt pathway One of three potential developmental pathways for oppositional defiant disorder and conduct disorder, with minor forms and consequences of aggression leading to more serious forms and consequences of aggression.

P

Panic disorder A type of anxiety disorder characterized by recurrent, somewhat unpredictable panic attacks (i.e., extremely intense and often frightening episodes of anxiety).

Parasuicide Includes many behaviors, from less dangerous gestures to serious but unsuccessful suicide attempts; this term is increasingly preferred over *attempted suicide* because the motives and intentions of individuals are often difficult to identify.

Pathways of parental impact Three ways in which parents influence the development of child depression: (1) parent depression affects parent–child relationships and interactions and leads to child psychopathology; (2) parent depression affects family relationships and interactions and family disruptions, and these lead to child psychopathology; (3) parent depression affects marital satisfaction, leading to child psychopathology.

Peer contagion A drawback of group adolescent treatments, peer contagion involves the sharing of information about conduct disorders, substance abuse disorders, as well as providing immediate and powerful reinforcement of deviancy.

Perfectionism A personal standard or attitude that involves setting unrealistic goals and a sense of failure and/or worthlessness when those goals are not met; in individuals with eating disorders, perfectionism often accompanies obsessionality and leads to the "relentless pursuit of the thin ideal."

Persistent depressive disorder Involves a long-standing disturbance of mood, with ongoing sadness, irritability, and lack of motivation. Formerly called *dysthymia*.

Personality disorder A pattern of personality characteristics reflecting atypical experiences of self and/or relationships that are associated with distress or dysfunction.

Phenotype The observable characteristics of an individual.

Phobic disorders Types of anxiety disorders characterized by excessive and unrealistic fears of particular objects or situations, intense anxiety in the presence of such objects or situations, and avoidant behaviors.

Physical abuse A type of child maltreatment involving physical aggression that results in pain, injury, or bodily harm.

Physical dependence Susceptibility to withdrawal symptoms; occurs only in combination with tolerance.

Physiological models Models of psychopathology that emphasize biological processes, such as genes and neurological systems, as being at the core of human experience; physiological models explain the development of psychopathology, its course, and its treatment in terms of biological factors.

Pica The ingestion of nonfood substances such as paint, pebbles, or dirt.

Polygenic model An etiological model of disorders based on the cumulative and additive effect of multiple genes.

Poly-victimization The experience of children exposed to high levels of many types of victimization.

Positive psychology A field of psychology focusing on positive subjective experience, positive individual traits, and positive institutions that seeks to promote individual, family, social, and community well-being.

Posttraumatic growth An adaptive response to trauma characterized by positive changes.

Posttraumatic stress disorder (PTSD) A disorder characterized by a severe and ongoing pattern of anxiety and avoidance, lasting longer than one month, following exposure to a traumatic event.

Prevalence All current cases of a type (or types) of disorder.

Primary prevention Reducing or eliminating psychopathology-related risks, thereby reducing the incidence of disorder in children.

Process research Studies of the specific mechanisms and common factors that account for therapeutic change.

Prodrome The period of time before the first episode of psychosis.

Projective measures Measures such as the Rorschach inkblots and the Thematic Apperception Test that are based on the assumption that, given an ambiguous stimulus, individuals' responses will reflect the projection of unconscious conflicts.

Prosocial behaviors Behaviors that benefit self, others, and society.

Protective factors The individual, family, and social characteristics that are associated with positive adaptation or resiliency.

Psychodynamic models Psychological models that emphasize unconscious cognitive, affective, and motivational processes; mental representations of self, others, and relationships; the subjectivity of experience; and a developmental perspective on individual adjustment and maladjustment.

Psychological dependence A craving or compulsion to use a substance despite significant harm.

Psychopathology Intense, frequent, and persistent maladaptive patterns of emotion, cognition, and behavior that are associated with significant distress and impairment in functioning.

Psychosis A thought disorder involving a loss of contact with reality; delusions or hallucinations are examples of psychotic experiences.

R

Reactive aggression Angry and impulsive aggression that occurs in response to a provocation.

Reactive attachment disorder (RAD) A rare attachment disorder involving lack of organized attachment behaviors and reduced social engagement; diagnosed in children with very adverse childcare experiences.

Reactivity An infant's excitability and responsiveness, including individual variations in emotions and behaviors.

Regulation What an infant does to control his or her reactivity, as well as the degree to which a distressed infant accepts comfort from others.

Reinforcement The idea that positive and negative consequences lead to changes in behavior; a critical component of all learning processes.

Reinforcement model In this model, based on the principles of operant conditioning, behavior is maintained, or changed, in response to positive or negative consequences.

Reliability A measure of whether different clinicians, using the same set of criteria, classify children into the same clearly defined categories.

Resilience Adaptation (or competence) despite adversity.

Resistant (anxious/ambivalent) attachment A form of insecure attachment that usually reflects inconsistent caregiving.

Risk Increased vulnerability to disorder.

Risk alleles Genetic variants that impair general processes (e.g., cognitive or emotion functions) across many disorders.

Risk factors The individual, family, and social characteristics that are associated with increased vulnerability, or risk.

Restricted, repetitive behaviors and fixated interests Among the core, defining symptoms of autism spectrum disorder. These behaviors and focused interests appear to be associated with anxiety—both the direct experience of anxiety and attempts to manage or minimize the experience of anxiety.

Rumination The repeated chewing and regurgitation of food.

S

Secondary prevention Interventions that are implemented following the early signs of distress and dysfunction, before the disorder is clearly established in the child.

Selective preventive measures Type of preventive measures; provided for at-risk groups (e.g., Head Start programs for preschoolers from disadvantaged backgrounds).

Self-regulation Control of one's emotions, cognitions, and behaviors, involving both automatic and controlled processes.

Self-talk A cognitive technique focused on providing positive self-statements such as "I am brave" to enhance appropriate behaviors.

Separation anxiety disorder A type of anxiety disorder characterized by intense age-inappropriate distress when separated from the caregiver, as well as clingy behaviors in the presence of the caregiver; associated with significant impairment in a child's daily functioning.

Sexual abuse A type of child maltreatment involving sexual contact or attempted sexual contact between an adult and a child.

Shared environment The aspects of family life and function that are shared by all children in the family.

Sleep–wake disorders Clinically significant difficulties related to falling and staying asleep, or sleep dysfunctions, associated with impairment in development and functioning.

Social and communication deficits Deficits in social–emotional reciprocity, in nonverbal communication, and in developing and maintaining relationships.

Social cognition Psychological construct involving the processing of social and emotional information and events; this processing is observed at the intersections of self and other, emotion and cognition, and language and meaning.

Social phobia A type of anxiety disorder characterized by an intense fear of scrutiny or evaluation by others.

Sociocultural models Models that emphasize the importance of the social context, including gender, race, ethnicity, and socioeconomic status, in the development, course, and treatment of psychopathology.

Sociocultural norms The beliefs and expectations of certain groups about what kinds of emotions, cognitions, and/or behaviors are undesirable or unacceptable.

Somatic symptom disorder A disorder characterized by the expression of anxiety through physical symptoms such as headaches and abdominal pain, leading to clinically significant distress and impairment.

Somatization A term that refers to a variety of processes in which an individual experiences physical symptoms, such as pain or loss of function, for which a physical cause cannot be found or, if present, cannot fully account for the level of impairment.

Specific learning disorder A disorder characterized by unexpected underachievement in reading, written expression, and mathematics.

Specific phobia A type of anxiety disorder characterized by particular fear of an object, situation, or person (e.g., animals, injury or blood, natural phenomena).

Standardized tests Measures such as intelligence tests and some personality tests, in which the data from a particular child can be compared to data gathered from large samples of children, including typically developing children and those with a variety of diagnoses.

Statistical deviance Compared to the distribution in a particular sample, statistical deviance refers to the relative infrequency of certain emotions, cognitions, and/or behaviors.

Stigmatization Negative attitudes (such as blaming or overconcern with dangerousness), emotions (such as shame, fear, or pity), and behaviors (such as ridicule or isolation) related to psychopathology and mental illness.

Stress Physical and psychological response to demands that exceed coping resources.

Suicidal ideation Involves a variety of cognitions from fleeting thoughts that life is not worth living to specific plans for killing oneself.

Suicidality A broad term that refers to the risk of suicidal ideation (thinking about suicide) as well as the risk for suicidal behavior (attempted or completed suicide).

Suicide The intentional taking of one's own life.

Systematic desensitization A classic treatment for fears based on the principles of classical conditioning; involves teaching an anxious child how to relax and how to maintain relaxation when exposed to the feared stimulus. Exposure is done gradually (i.e., systematically, from stuffed dogs to videos of dogs to real dogs), building on the child's successes over time.

T

Temperament Variations in newborns' styles of reactivity (e.g., attention, activity, moods, and distress) and regulation of reactivity.

Tertiary prevention Interventions that are implemented for already present and clinically significant disorders.

Theory of mind (ToM) The ability to attribute mental states to others.

Tolerance Occurs when the central nervous system (CNS) gradually becomes less responsive to stimulation by particular drugs; individuals then need to ingest higher and higher doses to achieve the same CNS effects.

Toxic stress The experience of multiple or chronic stressors that activate or overwhelm the stress response system.

Translational research Research designed, conducted, and interpreted with meaningful applications and social value in mind.

Two-factor model A model of attention deficit/hyperactivity disorder emphasizing two distinct factors that underlie impairments: inattention and hyperactivity/impulsivity.

U

Universal preventive measure A type of preventive measure provided for entire populations (e.g., mandatory immunizations for children).

V

Validity A measure of whether the classification gives true-to-life, meaningful information.

W

Williams syndrome A developmental disorder caused by a microdeletion on chromosome 7, characterized by deficits in general cognitive function and visual–spatial skills and relative strengths in the language and music domains.

Withdrawal symptoms Noxious physical and psychological effects caused by reduction or cessation of substance intake (e.g., sleep disturbances, headaches, nausea and vomiting, tremors and restlessness, anxiety and depression); these symptoms can range from relatively mild to life threatening.

Worries Anxieties about possible future events.

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DSM-5 CLASSIFICATIONS

Neurodevelopmental Disorders

Intellectual Disabilities

Intellectual Disability (Intellectual Developmental Disorder)/Global Developmental Delay/Unspecified Intellectual Disability (Intellectual Developmental Disorder)

Communication Disorders

Language Disorder/Speech Sound Disorder/Childhood-Onset Fluency Disorder (Stuttering)/Social (Pragmatic) Communication Disorder/Unspecified Communication Disorder

Autism Spectrum Disorder

Autism Spectrum Disorder

Attention-Deficit/Hyperactivity Disorder

Attention-Deficit/Hyperactivity Disorder/Other Specified Attention-Deficit/Hyperactivity Disorder/Unspecified Attention-Deficit/Hyperactivity Disorder

Specific Learning Disorder

Motor Disorders

Developmental Coordination Disorder/Stereotypic Movement Disorder

Tic Disorders

Tourette's Disorder/Persistent (Chronic) Motor or Vocal Tic Disorder/Provisional Tic Disorder/Other Specified Tic Disorder/Unspecific Tic Disorder

Other Neurodevelopmental Disorders

Other Specified Neurodevelopmental Disorder/Unspecified Neurodevelopmental Disorder

Schizophrenia Spectrum and other Psychotic Disorders

Schizotypal (Personality) Disorder
Delusional Disorder
Brief Psychotic Disorder
Schizophreniform Disorder
Schizophrenia
Schizoaffective Disorder
Substance/Medication-Induced Psychotic Disorder
Psychotic Disorder Due to Another Medical Condition
Catatonia Associated with Another Mental Disorder
Catatonic Disorder due to Another Medical Condition
Unspecified Catatonia
Other Specified Schizophrenia Spectrum and Other Psychotic Disorder
Unspecified Schizophrenia Spectrum and Other Psychotic Disorder

Bipolar and Related Disorders

Bipolar I Disorder/Bipolar II Disorder/Cyclothymic Disorder/Substance/Medication-Induced Bipolar and Related Disorder/Bipolar and Related Disorder Due to Another Medical Condition/Other Specified Bipolar and Related Disorder/Unspecified Bipolar and Related Disorder

Depressive Disorders

Disruptive Mood Dysregulation Disorder/Major Depressive Disorder/Persistent Depressive Disorder (Dysthymia)/Premenstrual Dysphoric Disorder/Substance/Medication-Induced Depressive Disorder/Depressive Disorder Due to Another Medical Condition/Other Specified Depressive Disorder/Unspecified Depressive Disorder

Anxiety Disorders

Separation Anxiety Disorder/Selective Mutism/Specific Phobia/Social Anxiety Disorder (Social Phobia)/Panic Disorder/Panic Attack Specifier/Agoraphobia/Generalized Anxiety Disorder/Substance/Medication-Induced Anxiety Disorder/Anxiety Disorder Due to Another Medical Condition/Other Specified Anxiety Disorder/Unspecified Anxiety Disorder

Obsessive-Compulsive and Related Disorders

Obsessive-Compulsive Disorder/Body Dysmorphic Disorder/Hoarding Disorder/Trichotillomania (Hair-Pulling Disorder)/Excoriation (Skin-Picking) Disorder/Substance/Medication-Induced Obsessive-Compulsive and Related Disorder/Obsessive-Compulsive and Related Disorder Due to Another Medical Condition/Other Specified Obsessive-Compulsive and Related Disorder/Unspecified Obsessive-Compulsive and Related Disorder

Trauma- and Stressor-Related Disorders

Reactive Attachment Disorder/Disinhibited Social Engagement Disorder/Posttraumatic Stress Disorder (includes Posttraumatic Stress Disorder for Children 6 Years and Younger)/Acute Stress Disorder/Adjustment Disorders/Other Specified Trauma- and Stressor-Related Disorder/Unspecified Trauma- and Stressor-Related Disorder

Dissociative Disorders

Dissociative Identity Disorder/Dissociative Amnesia/Depersonalization/Derealization Disorder/Other Specified Dissociative Disorder/Unspecified Dissociative Disorder

Somatic Symptom and Related Disorders

Somatic Symptom Disorder/Illness Anxiety Disorder/Conversion Disorder (Functional Neurological Symptom Disorder)/Psychological Factors Affecting Other Medical Conditions/Factitious Disorder (includes Factitious Disorder Imposed on Self, Factitious Disorder Imposed on Another)/Other Specified Somatic Symptom and Related Disorder/Unspecified Somatic Symptoms and Related Disorder

Feeding and Eating Disorders

Pica/Rumination Disorder/Avoidant/Restrictive Food Intake Disorder/Anorexia Nervosa (Restricting type, Binge-eating/Purging type)/Bulimia Nervosa/Binge-Eating Disorder/Other Specified Feeding or Eating Disorder/Unspecified Feeding or Eating Disorder

Elimination Disorders

Enuresis/Encopresis/Other Specified Elimination Disorder/Unspecified Elimination Disorder

Sleep-Wake Disorders

Insomnia Disorder/Hypersomnolence Disorder/Narcolepsy

DSM-5 CLASSIFICATIONS

Breathing-Related Sleep Disorders

Obstructive Sleep Apnea Hypopnea/Central Sleep Apnea/Sleep-Related Hypoventilation/Circadian Rhythm Sleep-Wake Disorders

Parasomnias

Non-Rapid Eye Movement Sleep Arousal Disorders/Nightmare Disorder/Rapid Eye Movement Sleep Behavior Disorder/Restless Legs Syndrome/Substance/Medication-Induced Sleep Disorder/Other Specified Insomnia Disorder/Unspecified Insomnia Disorder/Other Specified Hypersomnolence Disorder/Unspecified Hypersomnolence Disorder/Other Specified Sleep-Wake Disorder/Unspecified Sleep-Wake Disorder

Sexual Dysfunctions

Delayed Ejaculation/Erectile Disorder/Female Orgasmic Disorder/Female Sexual Interest/Arousal Disorder/Genito-Pelvic Pain/Penetration Disorder/Male Hypoactive Sexual Desire Disorder/Premature (Early) Ejaculation/Substance/Medication-Induced Sexual Dysfunction/Other Specified Sexual Dysfunction/Unspecified Sexual Dysfunction

Gender Dysphoria

Gender Dysphoria/Other Specified Gender Dysphoria/Unspecified Gender Dysphoria

Disruptive, Impulse-Control, and Conduct Disorders

Oppositional Defiant Disorder/Intermittent Explosive Disorder/Conduct Disorder/Antisocial Personality Disorder/Pyromania/Kleptomania/Other Specified Disruptive, Impulse-Control, and Conduct Disorder/Unspecified Disruptive, Impulse-Control, and Conduct Disorder

Substance-Related and Addictive Disorders

Substance-Related Disorders

Alcohol-Related Disorders: Alcohol Use Disorder/Alcohol Intoxication/Alcohol Withdrawal/Other Alcohol-Induced Disorders/Unspecified Alcohol-Related Disorder

Caffeine-Related Disorders: Caffeine Intoxication/Caffeine Withdrawal/Other Caffeine-Induced Disorders/Unspecified Caffeine-Related Disorder

Cannabis-Related Disorders: Cannabis Use Disorder/Cannabis Intoxication/Cannabis Withdrawal/Other Cannabis-Induced Disorders/Unspecified Cannabis-Related Disorder

Hallucinogen-Related Disorders: Phencyclidine Use Disorders/Other Hallucinogen Use Disorder/Phencyclidine Intoxication/Other Hallucinogen Intoxication/Hallucinogen Persisting Perception Disorder/Other Phencyclidine-Induced Disorders/Other Hallucinogen-Induced Disorders/Unspecified Phencyclidine-Related Disorders/Unspecified Hallucinogen-Related Disorders

Inhalant-Related Disorders: Inhalant Use Disorder/Inhalant Intoxication/Other Inhalant-Induced Disorders/Unspecified Inhalant-Related Disorders

Opioid-Related Disorders: Opioid Use Disorder/Opioid Intoxication/Opioid Withdrawal/Other Opioid-Induced Disorders/Unspecified Opioid-Related Disorder

Sedative-, Hypnotic-, or Anxiolytic-Related Disorders: Sedative, Hypnotic, or Anxiolytic Use Disorder/Sedative, Hypnotic, or Anxiolytic Intoxication/Sedative, Hypnotic, or Anxiolytic Withdrawal/Other Sedative-, Hypnotic-, or Anxiolytic-Induced Disorders/Unspecified Sedative-, Hypnotic-, or Anxiolytic-Related Disorder

Stimulant-Related Disorders: Stimulant Use Disorder/Stimulant Intoxication/Stimulant Withdrawal/Other Stimulant-Induced Disorders/Unspecified Stimulant-Related Disorder

Tobacco-Related Disorders: Tobacco Use Disorder/Tobacco Withdrawal/Other Tobacco-Induced Disorders/Unspecified Tobacco-Related Disorder

Other (or Unknown) Substance-Related Disorders: Other (or Unknown) Substance Use Disorder/Other (or Unknown) Substance Intoxication/Other (or Unknown) Substance Withdrawal/Other (or Unknown) Substance-Induced Disorders/Unspecified Other (or Unknown) Substance-Related Disorder

Non-Substance-Related Disorders

Gambling Disorder

Neurocognitive Disorders

Delirium

Major and Mild Neurocognitive Disorders

Major or Mild Neurocognitive Disorder Due to Alzheimer's Disease

Major or Mild Frontotemporal Neurocognitive Disorder

Major or Mild Neurocognitive Disorder with Lewy Bodies

Major or Mild Vascular Neurocognitive Disorder

Major or Mild Neurocognitive Disorder Due to Traumatic Brain Injury

Substance/Medication-Induced Major or Mild Neurocognitive Disorder

Major or Mild Neurocognitive Disorder Due to HIV Infection

Major or Mild Neurocognitive Disorder Due to Prion Disease

Major or Mild Neurocognitive Disorder Due to Parkinson's Disease

Major or Mild Neurocognitive Disorder Due to Huntington's Disease

Major or Mild Neurocognitive Disorder Due to Another Medical Condition

Major and Mild Neurocognitive Disorders Due to Multiple Etiologies

Unspecified Neurocognitive Disorder

Personality Disorders

Cluster A Personality Disorders

Paranoid Personality Disorder/Schizoid Personality Disorder/Schizotypal Personality Disorder

Cluster B Personality Disorders

Antisocial Personality Disorder/Borderline Personality Disorder/Histrionic Personality Disorder/Narcissistic Personality Disorder

Cluster C Personality Disorders

Avoidant Personality Disorder/Dependent Personality Disorder/Obsessive-Compulsive Personality Disorder

Other Personality Disorders

Personality Change Due to Another Medical Condition/Other Specified Personality Disorder/Unspecified Personality Disorder

DSM-5 CLASSIFICATIONS

Paraphilic Disorders

Voyeuristic Disorder/Exhibitionist Disorder/Frotteuristic Disorder/Sexual Masochism Disorder/Sexual Sadism Disorder/Pedophilic Disorder/Fetishistic Disorder/Transvestic Disorder/ Other Specified Paraphilic Disorder/ Unspecified Paraphilic Disorder

Other Mental Disorders

Other Specified Mental Disorder Due to Another Medical Condition/Unspecified Mental Disorder Due to Another Medical Condition/Other Specified Mental Disorder/Unspecified Mental Disorder

Medication-Induced Movement Disorders and Other Adverse Effects of Medication

Neuroleptic-Induced Parkinsonism/Other Medication-Induced Parkinsonism/ Neuroleptic Malignant Syndrome/ Medication-Induced Acute Dystonia/ Medication-Induced Acute Akathisia/ Tardive Dyskinesia/Tardive Dystonia/ Tardive Akathisia/Medication-Induced Postural Tremor/Other Medication-Induced Movement Disorder/ Antidepressant Discontinuation Syndrome/Other Adverse Effect of Medication

Other Conditions That May Be a Focus of Clinical Attention

Relational Problems

Problems Related to Family Upbringing
Other Problems Related to Primary Support Group

Abuse and Neglect

Child Maltreatment and Neglect Problems
Adult Maltreatment and Neglect Problems

Educational and Occupational Problems

Educational Problems
Occupational Problems

Housing and Economic Problems

Housing Problems
Economic Problems

Other Problems Related to the Social Environment

Problems Related to Crime or Interaction with the Legal System

Other Health Service Encounters for Counseling and Medical Advice

Problems Related to Other Psychosocial, Personal, and Environment Circumstances

Other Circumstances of Personal History

Problems Related to Access to Medical and Other Health Care
Nonadherence to Medical Treatment

DSM-5 DISORDERS FOR FURTHER STUDY

The *DSM-5* Task Force judged that these disorders do not currently have sufficient supporting data for inclusion in *DSM-5* and therefore require further study. In fact, only a few of these proposed disorders will ultimately meet criteria, and others will be excluded from further consideration. Many of the more interesting disorders are discussed in one or more appropriate chapters.

Attenuated Psychosis Syndrome

Key features include delusions, hallucinations, or disorganized speech that distresses and disables the individual; the symptoms are like psychosis but not extreme enough to be considered a full psychotic disorder.

Depressive Episodes with Short-Duration Hypomania

Key features of this disorder are depressive episodes and episodes resembling hypomanic episodes but having a shorter duration (at least 2 days but below the 4-day minimum for hypomanic episodes).

Persistent Complex Bereavement Disorder

Key feature is intense grief for a year or more after the death of someone close to the bereaved individual.

Caffeine Use Disorder

Key features of this disorder are constant caffeine use and an inability to control use.

Internet Gaming Disorder

Key features of this disorder are the fixation on Internet games and continually playing them, at the expense of school, work, and/or social interactions.

Neurobehavioral Disorder Associated with Prenatal Alcohol Exposure

The key feature is diminished behavioral, cognitive, or adaptive functioning due to prenatal alcohol exposure.

Suicidal Behavior Disorder

Key feature is a suicide attempt within the past 2 years that is not related to confusion or delirium.

Nonsuicidal Self-Injury

Key feature is repeated, yet nonserious, self-inflicted bodily damage. The individual engages in these acts due to interpersonal problems, negative feelings, or uncontrollable and/or intense thoughts about the act of injuring themselves.

Source: American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Association.